

Supplementary notes to the revision of the genus *Lyponia* Waterhouse, 1878 (Coleoptera: Lycidae) with description of new taxa

Дополнения и замечания к ревизии рода *Lyponia* Waterhouse, 1878 (Coleoptera: Lycidae) с описанием новых таксонов

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КЛЮЧЕВЫЕ СЛОВА: Coleoptera, Lycidae, *Lyponia*, *Ponyalis*, *Mimodilophotes*, новые подрода, новые виды, Палеарктика, Юго-Восточная Азия.

ABSTRACT: The revision of the *Lyponia* Waterhouse, 1878 complex is complemented with notes and additions. *Ponyalis* Fairmaire, 1899 is raised to the generic level. Three new subgenera, *Poniella* subgen.n., *Sundolyponia* subgen.n. and *Mimoditonecia* subgen.n., are established in *Lyponia*, and eight new species are described: *Lyponia* (*Sundolyponia*) *sabahensis* sp.n. (Sabah, East Malaysia), *L.* (*Mimoditonecia*) *korotyaevi* sp.n. (Vietnam), *L.* (s.str.) *shaanxiensis* sp.n. (Continental China), *L.* (s.str.) *tamdaoensis* sp.n. (Vietnam), *L.* (*Weiyangia*) *murzini* sp.n. (NE India), *Ponyalis* *daucinus* sp.n., *P.* *chifengleei* sp.n. and *P.* *cinnatus* sp.n. (Taiwan). The distribution area of *Lyponia* is extended to the Greater Sunda Islands. A key to genera and subgenera of the complex and lists of *Lyponia* and *Ponyalis* species are provided.

РЕЗЮМЕ: Приводятся дополнения и замечания к ревизии комплекса *Lyponia* Waterhouse, 1878. Статус *Ponyalis* Fairmaire, 1899 повышается до родового уровня. В роде *Lyponia* Waterhouse, 1878 устанавливаются три новых подрода, *Poniella* subgen.n., *Sundolyponia* subgen.n. and *Mimoditonecia* subgen.n., а также описывается восемь новых видов: *Lyponia* (*Sundolyponia*) *sabahensis* sp.n. (Восточная Малайзия, Сабах), *L.* (*Mimoditonecia*) *korotyaevi* sp.n. (Вьетнам), *L.* (s.str.) *shaanxiensis* sp.n. (континентальный Китай), *L.* (s.str.) *tamdaoensis* sp.n. (Вьетнам), *L.* (*Weiyangia*) *murzini* sp.n. (СВ Индия), *Ponyalis* *chifengleei* sp.n., *P.* *daucinus* sp.n. and *P.* *cinnatus* sp.n. (Тайвань). Ареал *Lyponia* расширен до Больших Зондских островов включительно. Приводится опередельительная таблица родов и подродов комплекса, а также списки видов *Lyponia* and *Ponyalis*.

Introduction

The genus *Lyponia* Waterhouse, 1878 has been revised in a long-awaited work by Bocák [1999]. The group has been thoroughly examined morphologically, some of its important characters, such as the shape of the margin of the phallobase, the structure of the female genitalia with basally prolonged coxites, have been described for the first time. The complex has been shown to be among the few lycid genera whose distribution area almost exactly coincides with the limits of the Subregio Palaearctica of Semenov-Tian-Shanskij [1936], not going farther west than the Eastern Himalayas, farther south than North Indochina. Though in the north it reaches Russia (in the Kuril Islands) [Kazantsev, 1993], and not just Japan as assumes Bocák. At the same time availability of new material and the aparent advisability of certain comments on the presented classification of the genus call for supplementary notes some of which are presented below.

The following abbreviations are used in the paper: USNMNH — US National Museum of Natural History, Washington, D.C.; ZIP — Zoological Institute, St. Petersburg; ZIW — Zoological Institute, Warsaw; SK — author's collection.

Morphology and systematic account

Bocák presented a detailed description of many morphological peculiarities of the complex and used them in a numerical matrix. I admit that it is a lot easier to criticize a study than to do it. Still, as my work on the group had led me to rather different conclusions, I had to make a closer look into the details of the presented reasoning. To start with, the revision unfortunately appeared to be not free of certain inaccuracies and/or omissions of which I would mention the following:

1. at least one character has not been noted: the presence of numerous minute thorns in the preapical area of the median lobe vs. absence thereof. This character is present in all groups related to *Ponyalis* Fairmaire, 1899 (best seen on the lateral preapical rib) and absent in *Lyponia*. (A possible explanation of this fact is the author's method of treating genitalia when the outer layer of cuticle is obviously digested away during the KOH boiling — More about the genitalia treatment method in the Discussion part).

2. another set of characters, related to the longitudinal elytral costae, though mentioned, has not been included in the matrix data set, though it might offer pretty good differentiation criteria both at the specific and supraspecific level. These structures could have been analysed with respect to the degree of development of the primary costae in comparison to the secondary ones (first character), the degree of development of certain primary costae as compared to other primary ones (second character), the degree of reduction of the 3rd primary costa (third character), the latter is almost reaching apex in all *Ponyalis* groups, not going beyond the apical fifth or third in most *Lyponia* ones, or hardly reaching the apical half in *L. (Mimoditonecia)*, subgen.n., *L. (s. str.) kwatunensis* and *L. (s. str.) tamdaoensis* sp.n.;

3. in character (13), shape of antennal segment 3 of male, state 0, segment 3 filiform, in my opinion, does not exactly correspond to the actual shape of this antennomere in the indicated *Lyponia* groups (Fig. 11, also Bocák, 1999) as well as in one of the outer groups (*Melaneros*), where it is usually unequivocally flattened (state 1), whereas the obvious incorrectness of the suggested interpretation for the cladistic analysis arises from the presence of a truly filiform 3rd antennomere in some representatives of the other outer group (*Dictyoptera*);

4. character (18) repeats character (7), but uses different wording, indicating two states instead of three and affiliating other species groups thereto;

5. character (6), shape of median lobe in cross-section, is supposed to be flattened in all of the *Lyponia* complex, whereas, while it is true for the *Ponyalis* groups, it is not so in some of the *Lyponia* proper species, "at least in basal half of the length", as described by state 0 thereof (i.e. in *L. brevicollis* group, *L. kleinei*, *L. kwatunensis*, etc.);

6. character (14), shape of the 1st antennal segment, has two states, segment 1 simple vs. segment 1 flattened, whereas, in my opinion, there exist three states of this character, 0 — simple elongate, 1 — simple globular, not compressed, and 2 — abruptly widened near base, with compressed anterior margin. State 0 is present in *L. (Weiyangia)* other than *L. (W.) brevicollis*, *L. (Sundolyponia)* subgen.n., *L. (Mimoditonecia)* subgen.n.; state 1 — in other *Lyponia* groups and state 2 — in *Ponyalis* groups;

7. the *dolosa* and *sichuanensis* groups, contrary to Bocák's opinion, in character (14) are in state "flattened", not "simple";

8. character (7) does not have state 0 and its legend polarity runs from 1 to 3, while the matrix operates with states 0 to 2 in the character set column;

9. in character (10) there is no state 1 in the legend, while the matrix operates with states 0 to 1;

That said, I have not attempted to adjust characters in the data matrix and repeat the computer analysis, as, according to most recent research (i.e. Kluge, 2000), the use of numerical methods to reconstruct phylogeny of arthropods at the present level of our knowledge of the group is of little scientific value in general, while its application for phylogenetic purposes at the species level seems to be pointless at all.

Instead, a traditional analysis of characters of the *Lyponia* complex has been made. It allowed to confirm its monophyly which is supported by such synapomorphies as the dorso-ventrally flattened and dilated fallus, the bent margin of the phallobase and the weaker third primary elytral costa (also manifest in *Mimodilophotes* Pic, 1939), excluding the elytral reticulation with mostly transverse cells from the diagnosis of the complex, as no transverse cells are noticeable on the elytra of *Lyponia (Weiyangia) murzini* sp.n., *L. (s. str.) tamdaoensis* sp.n., *L. (Sundolyponia) sabahensis* subgen.n., sp.n. and a few of others.

It also allowed to divide all the regarded taxa of the group into two groups, one of them including *Lyponia debilis* Waterhouse, the type species of the genus, the other including *Ponyalis laticornis* Fairmaire, the type species of *Ponyalis*. The two groups differ from each other by such characters as the fused basal part of the coxites in *Ponyalis* vs. basally free ones in *Lyponia* and the simple 1st antennal joint in both sexes in the former vs. abruptly widened and externally compressed one in the latter. It is noteworthy that the fused basal part of coxites, a structure of the very conservative and structurally uniform female genitalia, is, as correctly noted by Bocák, rarely met in the family, there being nothing similar in any close relative of the group. The same applies to the shape of the 1st antennal joint: to my knowledge, there is no match to the sharpened exterior margin of such segment in the rest of the Lycidae (except in some representatives of the morphologically diverse *Platerodrilus* Pic, 1921). Above all, the two characters seem to perfectly correlate, dividing the complex into the mentioned two groups without any conspicuous transitional forms. In this case we obviously have two distinct genera with sound apomorphies each.

Next, the *Lyponia* part of the complex seems to be equally easily divided into three groups, in accordance with the combination of the shape and structure of the fore male trochanters (the long ones with flat membranous and probably adhesive exterior area vs. small and unmodified ones), shape and structure of the male 3rd antennal joint (lamellate or exteriorly flattened and setose one vs. unlamellate and unmodified one) and the shape of the aedeagus. Here, too, the characters well correlate and divide the genus into groups of definitely supraspecific importance, one of them naturally being *Lyponia* s. str., the second one *Weiyangia* Bocák, 1999, and the third one *Poniella* subgen.n., the apomorphies of which are indicated below.

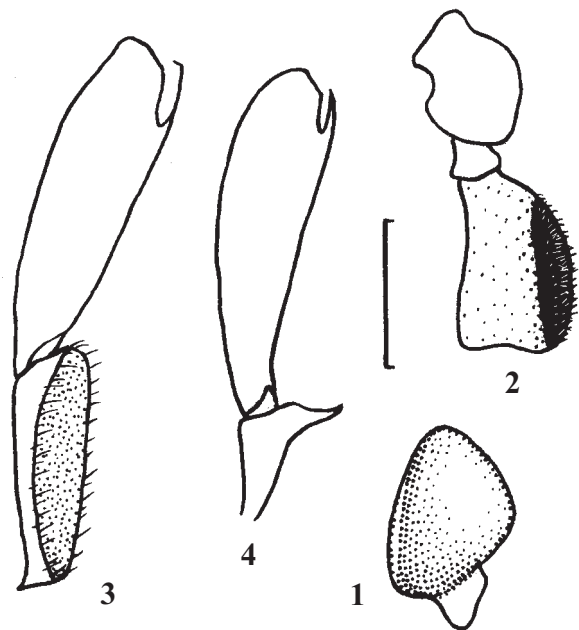
Ponyalis Fairmaire revalidated by Bocák as a subgenus of *Lyponia*, is hereby raised to the generic level. After the transfer of the *sichuanensis* and *dolosa* groups to the complex with exteriorly compressed 1st antennal joint, *Ponyalis* becomes clearly set off from the affiliated taxa. Its monophyly is supported by the following apomorphies:

1. 1st antennal joint in both sexes abruptly widened near base and more or less compressed at anterior margin (Fig. 1).
2. 3rd primary elytral costa nearly reaching the apex of the elytra.
3. Aedeagus with numerous minute thorns in the preapical portion of the median lobe (Fig. 30).
4. Basal part of coxites fused and spermathecal duct long.

At the same time discovery of new divergent *Lyponia* species in Oriental material makes me erect in addition to the above mentioned *L. (Poniella)* subgen.n., another two new subgenera, whose distinguishing characters widen the *Lyponia* group character range, with their description presented below. *Mimodilophotes* is also preliminary included in the complex, though it differs from the other two genera in many important aspects [Kazantsev, 2000].

A KEY TO GENERA AND SUBGENERA OF THE *LYPONIA* COMPLEX:

1. Maxillary and labial palpi pointed apically. Elytral interstices with one row of cells. Tarsi narrow and having no plantar pads, except in tarsomere 4 *Mimodilophotes* Pic
— Maxillary and labial palpi widened apically. Elytral interstices with double rows of cells. Tarsomeres lobed and having plantar pads 2
2. 1st antennal joint in both sexes abruptly widened and more or less compressed at anterior margin (Fig. 1). 3rd primary elytral costa nearly reaching apex of elytra. Aedeagus with pair of conspicuous latero-apical teeth and numerous minute thorns in the preapical portion of the median lobe (Fig. 30). Basal part of coxites fused and spermathecal duct long *Ponyalis* Fairmaire, **stat.n.**
— 1st antennal joint in both sexes gradually widened and not compressed anteriorly (Figs. 2, 5, 8, 11, 14). 3rd primary elytral costa not going beyond apical fifth. Aedeagus without numerous minute thorns in the preapical portion of the median lobe (Figs. 6–7, 12–13, 23–24). Basal part of coxites free, spermathecal duct short
..... *(Lyponia)* Waterhouse) 3
3. 3rd antennal joint in male with developed lamella. Eyes small (separated above by at least 1.7 times their length). Front trochanters in male considerably exceeding in length half of pertinent femorae, exteriorly with flat membranous (adhesive ?) area (Fig. 3). Female trochanters nearly as long as half of pertinent femorae *Lyponia* (s. str.)
— Lamella in 3rd antennal joint in male absent, if present, eyes large (separated above by maximum 1.3 times their length). Front trochanters small and unmodified in both sexes, if modified, without exterior flat membranous (adhesive) area 4
4. Male antennae feebly dentate, their 3rd joint unmodified 5



Figs. 1–4. Male antennal joints and trochanters and femorae of fore legs: 1 — *Ponyalis laticornis* Fairmaire, 1st antennal joint, antero-dorsally; 2 — *Lyponia (Poniella) gongashanica* Bocák, 1st to 3rd antennal joints; 3 — *L. (s. str.) osawai* Nakane, trochanter and femora; 4 — *L. (Sundolyponia) sabahensis* subgen.n., sp.n., holotype, trochanter and femora. Scale: 0.5 mm.

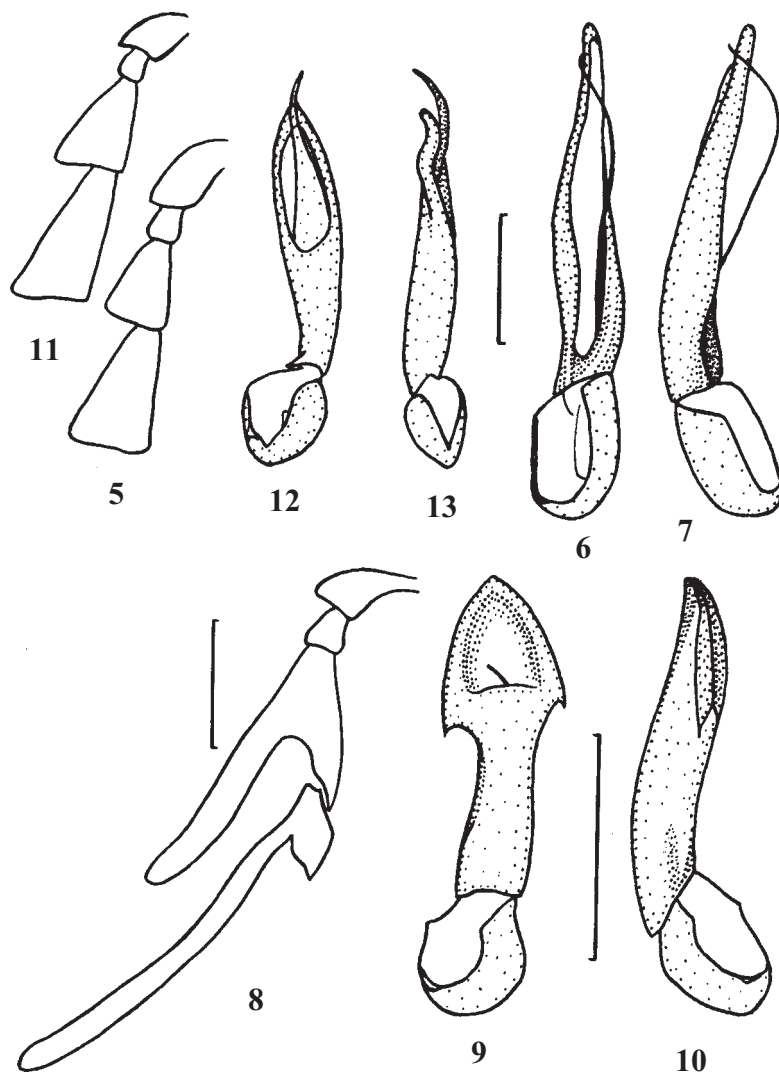
Рис. 1–4. Антенные членики и трохантеры и бедра передних ног самцов: 1 — *Ponyalis laticornis* Fairmaire, 1-й антенный членик, антерио-дорзально; 2 — *Lyponia (Poniella) gongashanica* Bocák, 1–3-й антенные членики; 3 — *L. (s. str.) osawai* Nakane, трохантер и бедро; 4 — *L. (Sundolyponia) sabahensis* subgen. n., sp.n., голотип, трохантер и бедро. Масштаб: 0,5 мм.

- Male antennae lamellate, their 3rd joint with flattened setose exterior or lamella 6
- 5. Primary elytral costae easily separable from secondary ones. Male trochanters simple ... *L. (Weiyangia)* Bocák
— Primary elytral costae indistinguishable from secondary ones, except at base. Male trochanters spinose (Fig. 4) *L. (Sundolyponia)* subgen.n.
- 6. 1st antennal joint globular, 3rd one in male antennae with flattened setose area exteriorly (Fig. 2). Eyes small (separated above by at least 3 times their length). Aedeagus without latero-apical teeth or with minute ones
..... *L. (Poniella)* subgen.n.
- 1st antennal joint elongate, 3rd one in male antennae exteriorly with long lamella (Fig. 8). Eyes large (separated above by maximum 1.3 times their length). Aedeagus with pair of conspicuous latero-apical teeth (Fig. 9)
..... *L. (Mimoditonecia)* subgen.n.

Poniella subgen.n. (in *Lyponia*)

Type species: *Lyponia gongashanica* Bocák, 1999, by present designation

DIAGNOSIS. Differs from the nominative subgenus by the combination of the following characters: short and unmodified trochanters of the male fore leg, 3rd joint of male antennae without lamella, but exteriorly with flattened setose



Figs. 5–13. Aedeagi and antennal joints of *Lyponia* spp: 5–7 — *Lyponia* (*Sundolyponia*) *sababensis* subgen.n., sp.n., holotype ♂, 5 — 1st to 4th antennal joints; 6–7 — aedeagus ventrally (6), laterally (7); 8–10 — *Lyponia* (*Mimoditonecia*) *korotyaevi* subgen.n., sp.n., holotype ♂, 8 — 1st to 4th antennal joints; 9–10 — aedeagus ventrally (9), laterally (10); 11–13 — *Lyponia* (*Weiyangia*) *murzini* sp.n., holotype ♂, 11 — 1st to 4th antennal joints; 12–13 — aedeagus ventrally (12), laterally (13). Scale: 0.5 mm.

Рис. 5–13. Эдеагусы и антенные членики *Lyponia* spp: 5–7 — *Lyponia* (*Sundolyponia*) *sababensis* subgen.n., sp.n., голотип, ♂, 5 — 1–4-й антенные членики; 6–7 — эдеагус вентрально (6) и латерально (7); 8–10 — *Lyponia* (*Mimoditonecia*) *korotyaevi* subgen.n., sp.n., голотип, ♂, 8 — 1–4-й антенные членики; 9–10 — эдеагус вентрально (9) и латерально (10); 11–13 — *Lyponia* (*Weiyangia*) *murzini* sp.n., голотип, ♂, 11 — 1–4-й антенные членики; 12–13 — эдеагус вентрально (12) и латерально (13). Масштаб: 0,5 мм.

area (Fig. 2), relatively short and robust median lobe of the aedeagus, often provided with minute lateral teeth.

ETYMOLOGY. The name is derived from the generic name *Ponyalis* Fairmaire alluding to the resemblance to the aforesaid genus in the presence of lateral teeth in the aedeagus. Gender feminine.

REMARKS. All species of the new subgenus, except from Burma and Taiwan, have the aedeagus with minute lateral teeth.

DISTRIBUTION. NE Burma, Yunnan, Sichuan, Hubei, Taiwan, Honshu.

Sundolyponia subgen.n. (in *Lyponia*)

Type species: *Lyponia* (*Sundolyponia*) *sababensis* sp.n., by present designation

DIAGNOSIS. Differs from the nominative subgenus by the combination of the following characters: primary elytral costae indistinguishable from secondary ones throughout the elytra, except in the basal fourth, with the 4th primary costa stouter than secondary ones in the basal half only, short and spinose trochanters of the male fore leg (Fig. 4), not lamellate and simple 3rd joint of the male antennae (Fig. 5), long and slender median lobe of the aedeagus (Figs. 6–7).

ETYMOLOGY. The name is derived from the name of the archipelago (the Greater Sunda Islands) that includes Kalimantan where the species was collected. Gender feminine.

REMARKS. Only one species of the subgenus *Sundolyponia* so far is known.

DISTRIBUTION. Sabah, East Malaysia.

Lyponia(*Sundolyponia*)*sababensis*, sp.n.

Figs. 4–7.

DESCRIPTION. Black. Elytra cinababar red.

MALE. Head dorsally flat, antennal prominence conspicuous, antennal cavities separated by a little less than their width. Eyes relatively small (separated medially above by 3 times their length). Ultimate joint of maxillary palpi slightly longer than wide, widest at base and obliquely rounded apically. Antennae from 3rd joint flattened, moderately dentate (Fig. 5), reaching two thirds of elytra and tapering apically, with three apical joints nearly filiform; all joints with relatively short decumbent pubescence.

Pronotum transverse, only 1.3 times wider than long, with rounded sides, with blunt rounded anterior and right posterior angles, the latter supplied with minute

laterally produced laminae, anterior margin inconspicuously produced forward. Scutellum elongate, slightly narrowing and emarginate apically.

Elytra long (3.1 times as long as wide humerally), parallel-sided, with four equally stout basally primary longitudinal costae, three first of which noticeably weaker and indistin-

guishable from secondary ones in the rest of elytra and 4th one definitely more developed in basal half, with double rows of square cells in interstices, in 3rd and 4th interstice totally replaced with single rows in apical third; pubescence relatively long and dense, more developed along longitudinal costae and scarcer on transversal ones, bottom of cells hairless.

Legs slender; anterior trochanter spinose (Fig. 4).

Aedeagus long and slender (Figs. 6–7).

Length: 7.0–7.1 mm. Width (humeral): 1.7–1.8 mm.

FEMALE. Unknown.

Holotype ♂: Malaysia, Sabah prov., Banjaran Crocker Mts., Gunung Alab peak, 1650–1800 m, 30.iv–27.v.1996, M.Strba & R.Hergovits leg. (SK); Paratype ♂: BORNEO: Sabah, Mt Kinabalu N.P. Headquarters, 1558 m, IV-29-(19)87, beating foliage, D.E.Bright coll. (USNMNH).

ETYMOLOGY. The species is named after the East Malaysian state where it was collected.

DIAGNOSIS. *L. (S.) sabahensis* sp.n. easily differs from its congeners by the subgeneric characters.

Mimoditonecia subgen.n. (in *Lyponia*)

Type species: Lyponia (Mimoditonecia) korotyaevi sp.n., by present designation

DIAGNOSIS. Differs from the nominative subgenus and other subgenera of *Lyponia* by the combination of the following characters: elongate 1st antennal joint (Fig. 8), large eyes (separated above by maximum 1.3 times their length), short third primary elytral costa, approximate antennal sockets and a pair of conspicuous latero-apical teeth of the aedeagus (Fig. 9–10).

ETYMOLOGY. The name is derived from the generic name *Ditoneces* Waterhouse, 1879, alluding to the resemblance with the aforesaid genus in general appearance due to the large eyes, relatively approximate antennal sockets and rather hairy elytra. Gender feminine.

REMARKS. Only one species is known from this subgenus so far.

DISTRIBUTION. North Vietnam.

Lyponia (Mimoditonecia) korotyaevi sp.n.

Figs. 8–10.

DESCRIPTION. Dark brown. Pronotum light brown; elytra reddish testaceous.

MALE. Head dorsally concave, antennal prominence inconspicuous, antennal cavities separated by 5 times less than their width. Eyes relatively large (separated medially above by a little more than their length). Distal joint of maxillary palpi relatively small, slightly longer than wide, widest in middle and obliquely cut apically. Antennae from 3rd joint flattened, lamellate (Fig. 8), reaching over half of elytra; all joints with short decumbent pubescence.

Pronotum transverse, only 1.2 times wider than long, with almost straight sides concave near hind angles, only slightly broadening anteriorly, with blunt inconspicuous anterior and small acute posterior angles, anterior margin conspicuously triangularly produced forward. Scutellum elongate, slightly narrowing and emarginate apically.

Elytra long (3.5 times as long as wide humerally), very slightly widening posteriorly, with four equally stout basally longitudinal costae, 1st of which noticeably weaker in rest of elytra, and double rows of irregular cells in interstices, with double rows in 3rd and 4th interstice totally replaced with single ones in apical half; pubescence relatively long and dense, developed along longitudinal and transversal costae, bottom of cells hairless.

Legs slender; trochanters relatively short, provided with hairy brush on exterior surface.

Aedeagus apically dorso-ventrally flattened and curved (Figs. 9–10).

Length: 6.8 mm. Width (humeral): 1.6 mm.

FEMALE. Unknown.

Holotype ♂: Vietnam, 100 km NW Than Hoa, primary rain forest, 20.I.1989, B. Korotyaev leg. (ZIP); paratypes: 2 ♂♂, same label; 1 ♂, Vietnam, 75 km WNW Than Hoa, Ngok Lak, 90 m, 17.I.1989, B. Korotyaev leg. Vietnam, 100 km NW Than Hoa, primary rain forest, 20.I.1989, B. Korotyaev leg.; 1 ♂, Vietnam, mountains 50 km NW Thai-Nguen, 27.VII.1963, 300 m, O. Kabakov (ZIP and SK).

ETYMOLOGY. The species is named after one of the collectors, Dr. B. Korotyaev (St. Petersburg).

DIAGNOSIS. *L. (M.) korotyaevi* sp.n. is readily distinguishable from other members of *Lyponia* by the subgeneric characters and the shape of the aedeagus (Figs. 8–10). In the structure of the elytra with the 3rd primary costa not going beyond the apical half the new species is similar to *L. (s. str.) kuatunensis*.

REMARKS. In one of the paratypes (labeled “Vietnam, mountains 50 km NW Thai-Nguen, 27.VII.1963, 300 m, O. Kabakov”) the eyes are slightly smaller, being separated above by 1.3 times their length.

Lyponia (Weiyangia) murzini sp.n.

Figs. 11–13.

DESCRIPTION. Black. Elytra brick-red.

MALE. Head dorsally flat, antennal prominence conspicuous, antennal cavities separated by their width. Eyes relatively small (separated above by 3.3 times their length). Distal joint of maxillary palpi slightly longer than wide, widest near base and obliquely cut apically. Antennae from 3rd joint flattened, moderately dentate (Fig. 11), reaching two thirds of elytra; all joints with short decumbent pubescence.

Pronotum almost square, only 1.1 times wider than long, with almost straight sides, only slightly narrowing anteriorly, with blunt inconspicuous anterior and almost right posterior angles, anterior margin slightly triangularly produced forward. Scutellum elongate, slightly narrowing and emarginate apically.

Elytra long (3.3 times as long as wide humerally), parallel-sided, with four equally stout basally longitudinal costae, 1st of which noticeably weaker in rest of elytra, and double rows of irregular cells in interstices, with double rows in 3rd and 4th interstice totally replaced with single ones in apical third; pubescence relatively short and dense, more developed along longitudinal costae and scarcer on transversal ones, bottom of cells hairless.

Legs slender; anterior trochanter simple.

Aedeagus apically dorso-ventrally flattened and bent (Figs. 12–13).

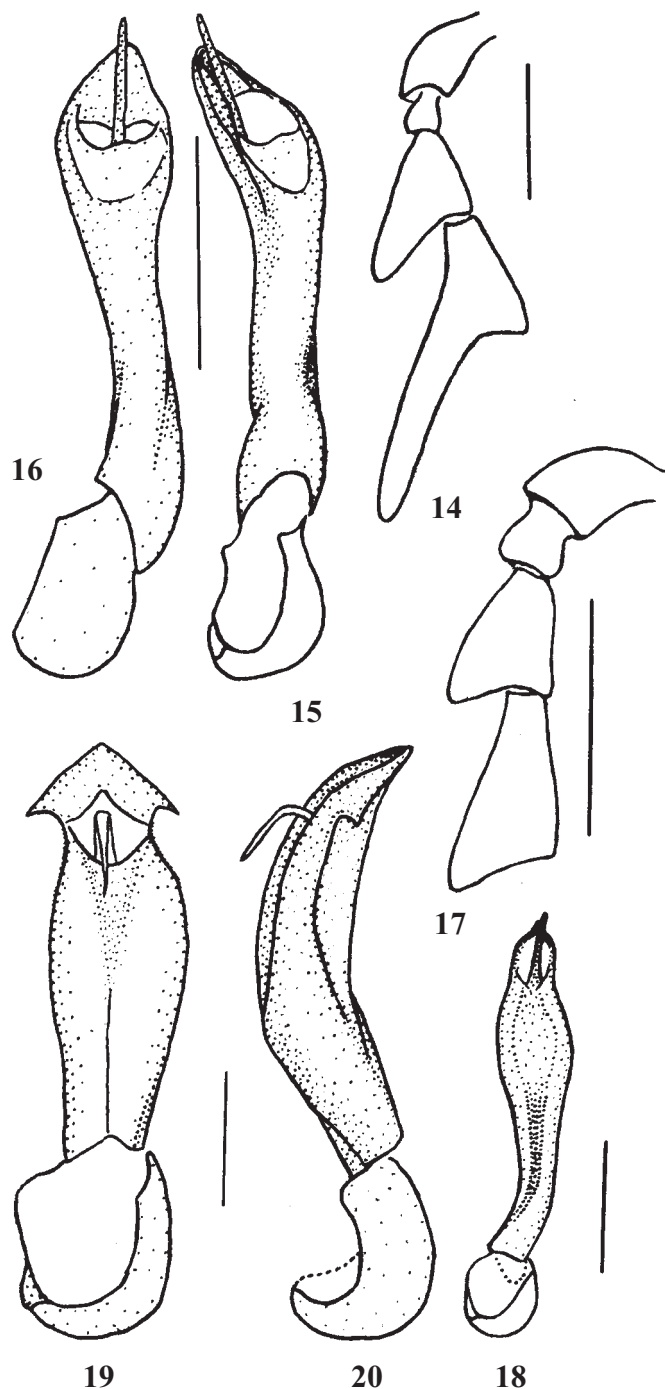
Length: 6.8 mm. Width (humeral): 1.7 mm.

FEMALE. Unknown.

Holotype ♂: NE India, W Meghalaya, Garo Hills, Nokrek nat. park, 1150 m, 25:25'N/90:20'E, 13–22.XII.1997, S. Murzin (SK).

ETYMOLOGY. The species is named after Dr. S. Murzin, Moscow, who collected the unique specimen.

DIAGNOSIS. *L. (W.) murzini* sp.n. is distinguishable from other members of the subgenus by the coloration and the shape of the aedeagus (Figs. 12–13). As in *L. (W.) pertica* Bocák, the aedeagus of the new species is not constricted in the middle and its antennae are slightly more dentate than in the other three known consubgenerics [Bocák, 1999]. Still the



Figs. 14–20. Aedeagi and antennal joints of *Lyponia* and *Ponyalis* spp.: 14–16 — *Lyponia* (s.str.) *shaanxiensis* sp.n., holotype male, 1st to 4th antennal joints (14), aedeagus laterally (15) and ventrally (16); 17–18 — *L.* (s.str.) *tamdaoensis* sp.n., holotype male, 1st to 4th antennal joints (17), aedeagus ventrally (18); 19–20 — *Ponyalis chifengleei* sp.n., holotype male, aedeagus ventrally (19) and laterally (20). Scale: 0.5 mm.

Рис. 14–20. Эдеагусы и антенные членики *Lyponia* и *Ponyalis* spp.: 14–16 — *Lyponia* (s.str.) *shaanxiensis* sp.n., голотип, самец, 1-й – 4-й антенные членики (14), эдеагус латерально (15) и вентрально (16); 17–18 — *L.* (s.str.) *tamdaoensis* sp.n. голотип, самец, 1-й – 4-й антенные членики (17), эдеагус вентрально (18); 19–20 — *Ponyalis chifengleei* sp.n., голотип, самец, эдеагус вентрально (19) и латерально (20). Масштаб: 0,5 мм.

apomorphies of the subgenus look sound enough, and it means that constriction of the aedeagus should be eliminated from the differential diagnosis of *Weiyangia* and the shape of the antennal segments of the subgenus, in accordance with the morphological characters of the new species and reasons given in Morphology and Systematic Account above, should be described as “feebly to moderately dentate”.

Lyponia (s.str.) *shaanxiensis* sp.n.

Figs. 14–16.

DESCRIPTION. Black. Pronotum, except at disc, and elytra brick-red.

MALE. Head dorsally flat, antennal prominence conspicuous, antennal cavities separated by half their width. Eyes relatively large (separated above by 1.7 times their length). Distal joint of maxillary palpi elongate, widest near middle and obliquely cut apically. Antennae from 3rd joint flattened, lamellate (Fig. 14), reaching two thirds of elytra; all joints with short decumbent pubescence.

Pronotum almost square, only 1.1 times wider than long, with almost straight sides, only slightly narrowing anteriorly, with blunt inconspicuous anterior and acute produced laterally posterior angles, anterior margin slightly triangularly produced forward. Scutellum elongate, slightly narrowing and emarginate apically.

Elytra long (3.5 times as long as wide humerally), almost parallelsided, with four equally stout basally longitudinal costae, 3rd of which noticeably weaker in distal half, and double rows of irregular cells in interstices, with double rows in 3rd and 4th interstice totally replaced with single ones in slightly more than distal fifth; pubescence relatively short and dense, more developed along longitudinal costae and scarcer on transversal ones, bottom of cells hairless.

Legs slender; anterior trochanter only 1.5 times shorter than pertinent femora and provided with flattened setose area; inner side of posterior tibiae bent only in basal portion.

Aedeagus twisted, apically dorso-ventrally flattened, widened and bent (Figs. 15–16).

Length: 8.3 mm. Width (humerally): 2.1 mm.

FEMALE. Unknown.

Holotype ♂: CHINA: SHAANXI, Taibaishan Mts., env. Houzhenzi, 1900 m, 1–12/viii/1999, Sinaiev & Plutenko (SK).

ETYMOLOGY. The name of the species is derived from the name of the province, Shaanxi.

DIAGNOSIS. *L.* (s.str.) *shaanxiensis* is distinguishable from other members of the nominative subgenus with a lamellate 3rd antennomere by the shape of the aedeagus (Figs. 15–16). The latter somewhat resembles that of *L. kuatumensis*, but the elytral reticulation of the two taxa does not allow to place them close to each other. At the same time the large eyes of the new species make it look like *L. (M.) korotyaeivi* sp.n., but the subgeneric characters well segregate them.

Lyponia (s.str.) *tamdaoensis* sp.n.

Figs. 17–18

DESCRIPTION. Black. Margins of pronotum and elytra brick-red.

MALE. Head dorsally flat, antennal prominence inconspicuous, antennal cavities separated by 0.75 their width. Eyes small (separated above by 3.5 times their length). Distal joint of maxillary palpi elongate, widest near middle and obliquely cut apically. Antennae from 3rd joint flattened and a little lamellate (Fig. 17), reaching over half of elytra; all joints with short decumbent pubescence.

Pronotum transverse, 1.4 times wider than long, trapezoidal, with blunt inconspicuous anterior and acute posterior angles, anterior margin convex. Scutellum elongate, parallel-sided, slightly emarginate apically.

Elytra long (3.3 times as long as wide humerally), almost parallel-sided, with four equal basally longitudinal costae, 3rd of which disappearing in basal third, and double rows of elongate cells in interstices, with double rows in 3rd and 4th interstice totally replaced with single ones in distal half; pubescence relatively short and dense, more developed along longitudinal costae and scarcer on transversal ones.

Legs slender; anterior trochanter 1.8 times shorter than pertinent femora and provided with flattened setose area; inner side of posterior tibiae bent in all its length.

Aedeagus slender (Figs. 18).

Length: 5.6 mm. Width (humerally): 1.5 mm.

FEMALE. Unknown.

Holotype ♂: N Vietnam, Tamdao, 900 m, 15.XI.1990, Bolotov leg. (SK).

ETYMOLOGY. The name of the species is derived from the name of the type locality, Tamdao.

DIAGNOSIS. *L.* (s.str.) *tamdaoensis* is probably close to *L. kuatunensis* due to the similar elytral structure with considerably shortened 3rd primary costa, at the same time easily separable by the less lamellate antennae (Fig. 17) and slenderer aedeagus (Fig. 18).

Ponyalis chifengleei sp.n.

Figs. 19–20.

DESCRIPTION. Black. Elytra, with exception of shoulders and narrow margins dark brick-red.

MALE. Head dorsally flat, shining, scarcely punctate, antennal tubercles conspicuous, antennal cavities separated by half their width. Eyes small (separated above by 4 times their length). Distal joint of maxillary palpi elongate, widest near base. Antennae from 3rd joint flattened, reaching over two thirds of elytra, from 4th joint lamellate, lamella of 4th one 1.5 times shorter than joint itself, of 5th one equal in length to joint; all joints with short decumbent pubescence, 3rd joint additionally with dense brush-like setae exteriorly, scape strongly compressed anteriorly, with flat dorsal and ventral surfaces.

Pronotum almost square, just 1.1 times wider than long, with almost straight sides, only slightly narrowing anteriorly and feebly concave near hind angles. Scutellum elongate, parallel-sided, rounded and inconspicuously emarginate apically.

Elytra relatively short (only 3.4 as long as wide humerally), slightly widening posteriorly, with four equally developed basally longitudinal costae, not much stouter than secondary ones, with 1st and 3rd of primary costae slightly weaker in posterior half, and double rows of mostly transverse cells in interstices, with double rows in 3rd and 4th interstice totally replaced with single ones 9 cells before apex; pubescence short, more developed along longitudinal costae and scarcer on transversal ones.

Aedeagus relatively stout, widening distally, conspicuously bent in lateral view, the apex of inner sac straight and directed downward (Figs. 19–20).

Length: 10.1 mm. Width (humerally): 2.5 mm.

FEMALE. Unknown.

Holotype ♂: Taiwan, Kaohsiung, Tengji, 22.VI.2000, leg. C.-F. Lee (SK).

ETYMOLOGY. The species is named after its collector, my friend Chi-Feng Lee, Ohio, a specialist in Psephenidae.

DIAGNOSIS. The new species is evidently close to *P. nigrohumeralis*, differing by the much more flattened scape, the complete black margination of the elytra and by the greater bend of the aedeagus in lateral view and the less curled tip of its internal sack (Fig. 20).

Ponyalis daucinus sp.n.

Figs. 21–23.

DESCRIPTION. Black. Pronotum, apex of scutellum and elytra orange-red; antennal tubercles posteriorly red.

MALE. Head dorsally flat, antennal tubercles conspicuous, posteriorly flattened, antennal cavities separated by a little less than their width. Eyes small (separated above by almost 4 times their length). Distal joint of maxillary palpi elongate, widest in middle and obliquely cut apically. Antennae from 3rd joint flattened, from 4th one with extremely long lamellae (Fig. 19), reaching over two thirds of elytra; all joints with short decumbent pubescence, 3rd one additionally with dense brush-like setae exteriorly (Fig. 21).

Pronotum transverse, 1.3 times wider than long, with anteriorly straight sides, with slightly blunt conspicuous anterior and acute posterior angles, anterior margin inconspicuously produced forward. Scutellum elongate, slightly narrowing and emarginate apically.

Elytra relatively short (3.4 as long as wide humerally), almost parallelsided, with four equally stout basally longitudinal costae, 1st and 3rd of which weaker in posterior half, and double rows of square cells in interstices, with double rows in 3rd and 4th interstice totally replaced with single ones 8 cells before apex; pubescence short, more developed along longitudinal costae and scarcer on transversal ones, bottom of cells hairless.

Legs with little flattened femurs.

Aedeagus rather slender with upright produced apex of inner sac (Figs. 22–23).

Length: 11.2 mm. Width (humerally): 2.8 mm.

FEMALE. Unknown.

Holotype ♂: Taiwan, Nantou, Tsefung, 5.IV.1992, leg. L.C. Chen (SK).

ETYMOLOGY. The specific name is derived from “daucum”, the Latin for carrot, alluding to the orange-red upper side of the insect.

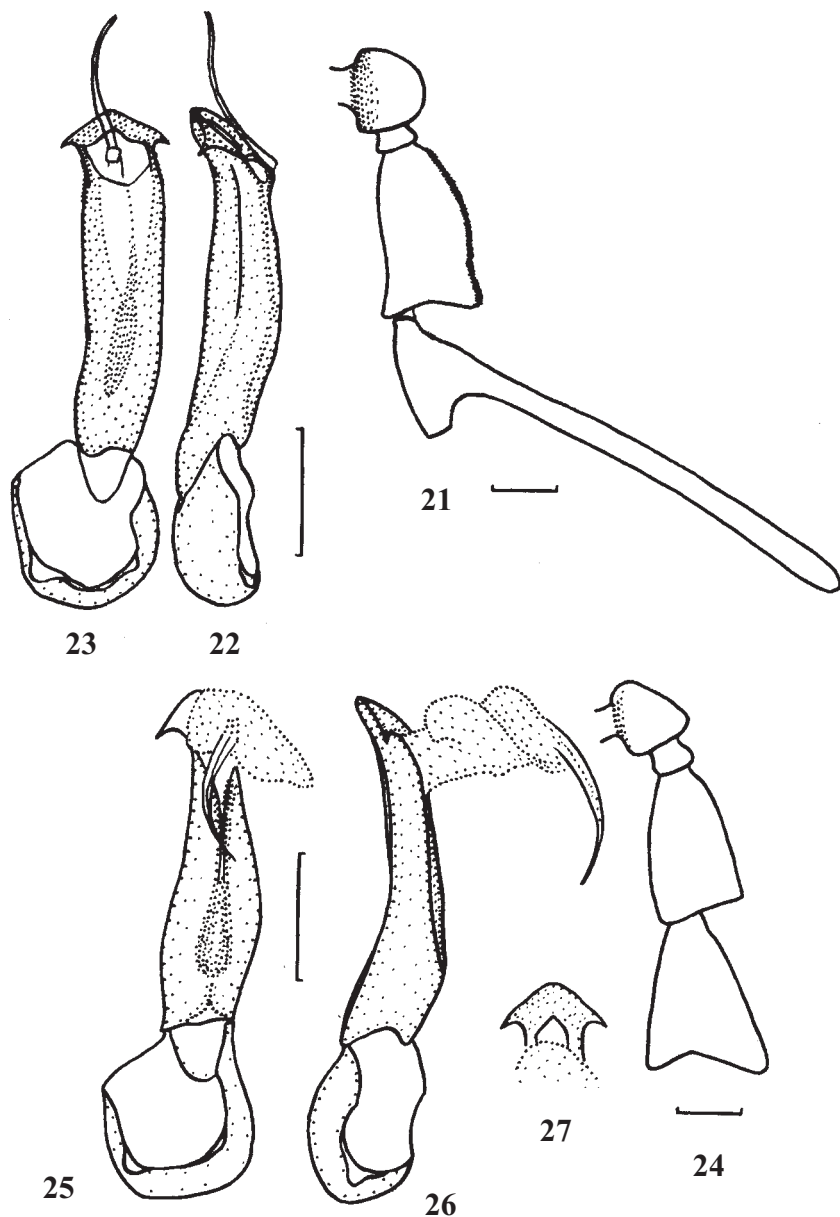
DIAGNOSIS. The new species should be placed near *P. dolosa*, differing from it by the uniformly orange-red pronotum, its shape and the details of the aedeagus (Figs. 22–23). *P. daucinus* is the second known species of the *Lyponia* complex (along with *L. nana*) with uniformly orange-red pronotum and elytra, as well as the red posterior part of the antennal tubercles.

Ponyalis cinnamatus sp.n.

Figs. 24–27.

DESCRIPTION. Black. Elytra cinnabar red; antennal tubercles posteriorly with reddish spots.

Male. Head dorsally flat, antennal tubercles conspicuous, antennal cavities separated by a little more than their width. Eyes small (separated above by over 4 times their length).



Figs. 21–27. Aedeagi and antennal joints of *Ponyalis* spp.: 21–23 — *Ponyalis daucinus* sp.n., holotype ♂, 21 — 1st to 4th antennal joints; 22–23 — aedeagus laterally (22), ventrally (23); 24–27 — *P. cincinnatus* sp.n., holotype ♂, 24 — 1st to 4th antennal joints; 25–26 — aedeagus ventrally (25), laterally (26); 27 — apex of median lobe, ventrally. Scale: 0.5 mm.

Рис. 21–27. Эдеагусы и антенные членики *Ponyalis* spp.: 21–23 — *Ponyalis daucinus* sp.n., голотип, ♂, 21 — 1–4-й антенные членики; 22–23 — эдеагус латерально (22) и вентрально (23); 24–27 — *P. cincinnatus* sp.n., голотип, ♂, 24 — 1–4-й антенные членики; 25–26 — эдеагус вентрально (25) и латерально (26); 27 — вершина медиальной трубки вентрально. Масштаб: 0,5 мм.

Ultimate joint of maxillary palpi elongate, widest near base and obliquely cut apically. Antennae from 3rd joint flattened, from 4th one moderately lamellate (Fig. 24), reaching two thirds of elytra; all joints with short decumbent pubescence.

Pronotum transverse, 1.2 times wider than long, with straight sides, rounded blunt anterior and rounded right posterior angles, anterior and posterior margins medially inconspicuously produced forward. Scutellum elongate, parallel-sided, concave medially and emarginate apically.

Elytra relatively short and broad (only 2.6 times as long as wide humerally), slightly diverging posteriorly, with four primary costae, hardly distinguishable from secondary ones even at base, and double rows of transverse cells in interstices, with double rows in 3rd and 4th interstice totally replaced with single ones 8 cells before apex; pubescence short, more developed along longitudinal costae and scarcer on transversal ones, bottom of cells almost everywhere hairless.

Legs with wide femurs.

Aedeagus rather slender with arrow-like pointed apex (Figs. 25–27).

Length: 12.2 mm. Width (humerally): 3.8 mm.

FEMALE. Unknown.

Holotype ♂: Taiwan, Hualien, Taroko N. P., 26.III.98, leg. S.-D. Yeh (SK).

ETYMOLOGY. The specific name is derived from the Latin for curly, alluding to the shape of the apical part of the internal sac of the aedeagus of the new species.

DIAGNOSIS. The new species is obviously close to *P. gestroi*, distinguishable by the wider pronotum with rounded posterior angles, the parallelsided concave scutellum and the details of the aedeagus with arrow-like pointed apex (Figs. 25–27). In having reddish spots on the posterior part of the antennal tubercles *P. cincinnatus* resembles *P. daucinus* and *L. nana*. The absence of minute thorns in the preapical part of the median lobe of the aedeagus is probably an artefact of the copulation friction that had taken place before the take of the specimen (the inner sac is extracted).

Lyponia (Poniella) nana Kleine, 1939

Figs. 28–29.

STUDIED MATERIAL: Paratype ♂: "N.E. Burma, Kambaiti, 700m, 19.IV.1934, R.Malaise", "*Lyponia nana* Kleine" (Kleine's manuscript label), "Paratype # 617" (ZIW).

DISTRIBUTION. NE Burma.

REMARKS. An illustration of the male genitalia of this species is given to provide more detail of its exterior structures and present a lateral view of the median lobe (Figs. 28–29).

Ponyalis himalejica (Bourgeois, 1885)

Fig. 30.

STUDIED MATERIAL: Paratype ♂: "N.E. Burma, Kambaiti, 700m, 16.IV.1934, R.Malaise", "*Lyponia patruelis* Kleine" (Kleine's manuscript label), "Paratype # 618" (ZIW).

DISTRIBUTION. Darjeeling, N Burma, N. Thailand, Laos, N Vietnam.

REMARKS. An illustration of the male genitalia of this species is given to provide more detail of the exterior structures of the median lobe (Fig. 30).

Ponyalis nigrohumeralis (Pic, 1938)
Figs. 31–32.

STUDIED MATERIAL: ♂, "Nordw. China, Sud-Shensi" (ZIW).

DISTRIBUTION. Sichuan, Shaanxi, Hubei.

REMARKS. An illustration of the male genitalia of this species is given to provide more detail of its exterior structures and present a lateral view of the median lobe (Figs. 31–32).

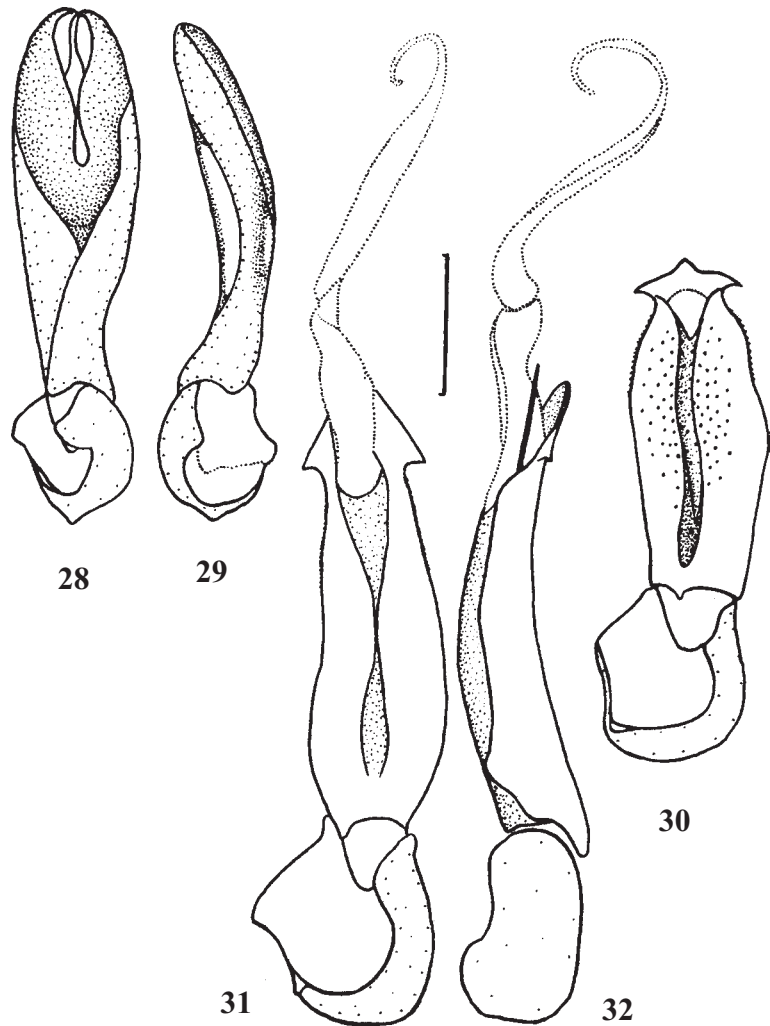
A check-list of *Lyponia* Waterhouse, 1878

The genus presently includes the following 20 species:

- L.* (s. str.) *debilis* Waterhouse, 1878. Fujian and Anhui to Guizhou.
L. (s. str.) *delicatula* (Kiesenwetter, 1874). Honshu, Kyushu, Shikoku.
L. (s. str.) *osawai* Nakane, 1969. Honshu, Kuril Islands.
L. (s. str.) *nepalensis* Nakane, 1983. Nepal.
L. (s. str.) *kuatunensis* Bocák, 1999. Fujian.
L. (s. str.) *shaanxiensis* sp.n. Shaanxi.
L. (s. str.) *tamdaoensis* sp.n. Vietnam.
L. (*Poniella*) *nana* Kleine, 1939. NE Burma.
L. (*Poniella*) *nigroscutellaris* (Ohbayashi, 1956). Honshu.
L. (*Poniella*) *kleinei* Nakane, 1967. Taiwan.
L. (*Poniella*) *palpalis* Nakane, 1971. Taiwan.
L. (*Poniella*) *minuta* Bocák, 1999. Yunnan.
L. (*Poniella*) *shennongjiensis* Bocák, 1999. Hubei.
L. (*Poniella*) *gongashanica* Bocák, 1999. Sichuan.
L. (*Weiyangia*) *brevicollis* Fairmaire, 1889. Sichuan.
L. (*Weiyangia*) *pertica* Bocák, 1999. Yunnan, Sichuan.
L. (*Weiyangia*) *taliensis* Bocák, 1999. Yunnan.
L. (*Weiyangia*) *murzini* sp.n. NE India.
L. (*Sundolyponia*) *sabahensis* subgen.n., sp.n. Sabah, East Malaysia.
L. (*Mimoditonecia*) *korotyaevi* subgen.n., sp.n. Vietnam.

One species is included in *Lyponia* incertae sedis: *L. robusta* Pic, 1939.

The distribution area of *Lyponia* due to the find of a new species in Sabah, East Malaysia, is considerably extended to the south and the genus is thus deleted from the list of strictly palaeoarchaeartic (sensu Semenov-Tian-Shanskij, 1936) taxa.



Figs. 28–32. Aedeagi of *Lyponia* and *Ponyalis* spp.: 28–29 — *Lyponia* (*Poniella*) *nana* Kleine, paratype ♂, ventrally; (28) and laterally (29); 30 — *Ponyalis bimalejica* (Bourgeois), paratype male of *Lyponia patruelis* Kleine, ventrally; 31–32 — *P. nigrohumeralis* (Pic), ventrally (31) and laterally (32). Scale: 0.5 mm.

Рис. 28–32. Эдеагусы *Lyponia* and *Ponyalis* spp.: 28–29 — *Lyponia* (*Poniella*) *nana* Kleine, паратип, ♂, вентрально (28) и латерально (29); 30 — *Ponyalis bimalejica* (Bourgeois), паратип *Lyponia patruelis* Kleine, ♂, эдеагус вентрально; 31–32 — *P. nigrohumeralis* (Pic), эдеагус вентрально (31) и латерально (32). Масштаб: 0,5 мм.

A check-list of *Ponyalis* Fairmaire, 1889, new status

The genus includes the following 17 species:

- P. laticornis* Fairmaire, 1899. N Burma, N Vietnam, Yunnan.
P. himalejica (Bourgeois, 1885). Darjeeling, N Burma, N. Thailand, Laos, N Vietnam.
P. sichuanensis Bocák, 1999. Sichuan.
P. tryznai Bocák, 1999. Sichuan.
P. gracilis Bocák, 1999. Fujian.
P. ishigakiana (Nakane, 1961). Loochoos, Fujian.
P. klapperichi Bocák, 1999. Fujian.
P. alternata (Pic, 1927). N. Vietnam.
P. gestroi Pic, 1912. Taiwan.

- P. oshimana* (Nakane, 1961). Ryukyus.
P. quadricollis (Kiesenwetter, 1874). Honshu, Kyushu, Shikoku.
P. nigrohumeralis (Pic, 1938). Sichuan, Shaanxi, Hubei.
P. dolosa (Kleine, 1924). Taiwan.
P. fukiensis Bocák, 1999. Fujian.
P. chifengleei sp.n. Taiwan.
P. daucinus sp.n. Taiwan.
P. cincinnatus sp.n. Taiwan.

Two species are included in *Ponyalis incertae sedis*: *P. diversicornis* (Pic, 1926) and *P. guerryi* (Pic, 1939).

The distribution area of *Ponyalis* lies within the limits of the Subregio Palaearchearctica [Semenov-Tian-Shanskij, 1936].

Discussion

In all of the paratype specimens of *Ponyalis klapperichi* that I had an opportunity to examine the aedeagus seemed to correspond not to the illustration of this species, but to that given for *P. ishigakiana* [Bocák, 1999]. Besides, some of the specimens from "Fukien" have definitely bicoloured pronotum, and this shrinks the difference between the mentioned two species to somewhat slenderer antennal joints and somewhat wider aedeagus in *P. klapperichi*. Given that the latter may be an artefact of the KOH boiling of the illustrated structure, I do not rule out that both taxa may prove conspecific.

As far as the preparation method used by Bocák (boiling the genital parts for 3 to 5 minutes in 10% KOH) is concerned it seems that it is not worth the effort. In most instances the soft-bodied Cantharoidea, where the Lycidae belong, do not possess inner structures of the aedeagus that have to be developed with KOH, while the outer layer of the genitals after such procedure obviously desintegrates, the usually softer internal sac structures lose shape and the general contours get distorted and become hardly recognisable. Instead, the extracted copulatory organs, as it was practised by other scholars who studied Lycidae and Cantharoidea (i.e. Green, 1949), are glued with water-soluble glue to cardboard plates, preferably in an upright position allowing their unobstructive view from different sides. It may also be helpful to put the genitalia in glycerine, at least temporarily, reliably protecting them from falling out of the container in case the liquid evaporates.

I find it appropriate to illustrate the actual shape and surface structures of the aedeagi of *Lyponia nana* Kleine (Figs. 28–29), *Ponyalis himalejica* (Bourgeois) (Fig. 30) and *P. nigrohumeralis* (Pic) (Figs. 31–32), that may be complementary to the figures provided by Bocák (1999), with the minute preapical thorns well noticeable in the *Ponyalis* species.

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