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Revision of the genus *Liodocistela* Pic, 1930 stat. nov. (Coleoptera: Tenebrionidae: Alleculinae)

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Abstract. Ten new species are described as follows: *Liodocistela bezdeki* sp. nov., *L. kejvali* sp. nov., *L. lubosi* sp. nov., *L. majeri* sp. nov., *L. pacholatkoi* sp. nov., *L. raii* sp.nov. and *L. tryznai* sp. nov. from India, *L. bocaki* sp. nov. from Indonesia (Sumatra isl.), *L. brancuccii* sp. nov. from Nepal and *L. maculata* sp. nov. from Laos and Thailand. A new genus *Liodocistela* Pic, 1930 stat. nov. is redescribed and raised from the level of subgenus. Two species, *Cistelopsis instriata* Pic, 1930 and *Cistelopsis (Liodocistela) weigeli* Novák, 2007, are newly transferred from the genus *Cistelopsis* to the genus *Liodocistela* as *Liodocistela* instriata (Pic, 1930) comb. nov. and *Liodocistela weigeli* (Novák, 2007) comb. nov. The species *L. instriata* (Pic, 1930) comb. nov. is redescribed. New species are illustrated and keyed together with all the known species of the genus *Liodocistela*. Check-list of species and key to similar genera are presented.

INTRODUCTION

The alleculine subgenus *Liodocistela* Pic, 1930 belongs to the tribe Alleculini Laporte, 1840, it was described as a monotypical subgenus (with the type species *L. rufomarginata* Pic, 1930) of the genus *Cistelopsis* Fairmaire, 1896 from India. Later, a second species, *Liodocistela nigrosuturata* was described by Borchmann in 1937 from south India. Both species (*L. rufomarginata* and *L. nigrosuturata*) were transferred into the genus *Stilbocistela* Borchmann, 1932 by Novák (2013). The subgenus *Liodocistela* is similar to the genus *Cistelopsis* Fairmaire, 1896 and mainly to the genus *Stilbocistela* Borchmann, 1932. The dorsal surface of *Stilbocistela* and *Liodocistela* species is glabrous, while the dorsal surface of *Cistelopsis* species has distinct setation. *Liodocistela* species differ mainly by having pronotum with anterior angles indistinct - rounded as well as anterior margin (*Stilbocistela* species with distinct anterior angles and anterior margin more or less straight).

It is clear that the *Liodocistela* is at the same level as *Cistelopsis* or *Stilbocistela*; that is why I raised it from the level of subgenus to level of the genus *Liodocistela* Pic, 1930 stat. nov. and added a redescription of the genus. Novák (2007) described new species *Cistelopsis* (*Liodocistela*) weigeli Novák, 2007 from Nepal. This species as well as the species of *Cistelopsis instriata* Pic, 1930 are newly transferred to the genus *Liodocistela* as *Liodocistela* weigeli (Novák, 2007) comb. nov. and *Liodocistela instriata* (Pic, 1930) comb. nov. The species *L. instriata* (Pic, 1930) comb. nov. is redescribed.

Ten new species are described as *Liodocistela bezdeki* sp. nov., *L. kejvali* sp. nov., *L. lubosi* sp. nov., *L. majeri* sp. nov., *L. pacholatkoi* sp. nov., *L. raii* sp. nov. and *L. tryznai* sp.

nov. from India, *L. bocaki* sp. nov. from Indonesia (Sumatra isl.), *L. brancuccii* sp. nov. from Nepal and *L. maculata* sp. nov. from Laos and Thailand.

New species are illustrated and keyed with all the known species of the genus *Liodocistela*. A check-list of the species and key to similar genera are presented.

MATERIAL AND METHODS

Two important morphometric characteristics used for the descriptions of species of the subfamily Alleculinae are employed: the 'ocular index' dorsally (Campbell & Marshall, 1964), calculated by measuring the minimum distance between the eyes and dividing this value by the maximum dorsal width across eyes, the quotient resulting from this division being converted into an index by multiplying by 100, and the 'pronotal index' (Campbell, 1965), the ratio of the length of the pronotum along the midline to the width at the posterior angles, this ratio being multiplied by 100 for convenience.

The following codens are used in the paper:

DHBC private collection of David Hauck, Brno, Czech Republic;

MNHN Muséum National d'Histoire naturelle, Paris, France;

NMBS Naturhistorische Museum, Basel, Switzerland;

NMPC National Museum, Praha, Czech Republic;

VNPC private collection of Vladimír Novák, Praha, Czech Republic.

Slash (/) separates data in different lines on locality labels, double slash (//) separates data on different labels.

Measurements of body parts and corresponding abbreviations used in text are as follows:

AL total antennae length

BL maximum body length

EL maximum elytral length

EW maximum elytral width

HL maximum length of head (visible part)

HW maximum width of head

OI ocular index dorsally

PI pronotal index dorsally

PL maximum pronotal length

PW pronotal width at base

RLA ratios of relative lengths of antennomeres 1-11 from base to apex (3=1.00)

RL/WA ratios of length / maximum width of antennomeres 1-11 from base to apex

RLT ratios of relative lengths of tarsomeres 1-5 respectively 1-4 from base to apex (1=1.00).

Other abbreviations used in the text:

wl (white label); rl (red label); yl (yellow label); pb (printed black); hb (handwritten black).

Measurements were made with Olympus SZ 40 stereoscopic microscope with continuous magnification and with Soft Imaging System AnalySIS.

TAXONOMY

KEY TO THE GENERA

1(2)	Upper part of body elongate oval or egg-shaped, with dense setation
2(1)	Upper part of body oval, convex and glabrous
3(4)	Upper part of body elongate oval or oval
4(3)	Upper part of body egg-shaped
5(6)	Space between eyes wide, as wide as diameter of eye, posterior angles of pronotum normal
6(5)	Space between eyes narrow, distinctly narrower than diameter of eye, posterior angles of pronotum sharply
	extended backwards
7(8)	Body small, very slightly widened only penultimate tarsomere
8(7)	Body large, penultimate tarsomere and often tarsomere before penultimate distinctly widened.
9(10)	Body large and oval, convex
10(9)	Body smaller, oval or elongate oval, slightly convex, more flat 11
11(12)	Anterior margin of pronotum rounded, anterior angles indistinct Cistelopsis Fairmaire, 1896
12(11)	Pronotum square-shaped, anterior angles distinct Ommatochara Borchmann, 1932
13(14)	Anterior angles of pronotum indistinct, anterior margin rounded Liodocistela Pic, 1930
14(13)	Anterior angles of pronotum distinct, anterior margin straight Stilbocistela Borchmann, 1932

REDESCRIPTION OF THE GENUS LIODOCISTELA PIC, 1930 stat. nov.

Cistelopsis subgenus Liodocistela Pic, 1930: 28.

Type species: Cistelopsis rufomarginata (Pic, 1930).

Redescription. General shape (Figs 1, 6, 11, 16, 19, 24, 29, 34, 39, 44 and 49) oval, convex. Body small, dorsal surface almost dark, glabrous with punctuation, shiny. Head (Figs 2, 7, 12, 17, 20, 25, 30, 35, 40, 45 and 50) robust, wide with punctuation, distinctly narrower than pronotum. Eyes very large, transverse, strongly excised; space between eyes narrow. Antenna (Figs 3, 8, 13, 18, 21, 26, 31, 36, 41, 46 and 51) relatively short, slightly exceeding half of body length, with short setation. Antennomere 2 shortest, antennomere 3 short, only slightly longer than antennomere 2, distinctly shorter than densely punctuate antennomeres 4-11. Antennomeres 1-3 slightly shiny, antennomeres 4-10 matte, distinctly serrate, not more than twice and half longer than wide at apex. Maxillary palpus with triangular, axeshaped ultimate palpomere. Pronotum (Figs 2, 7, 12, 17, 20, 25, 30, 35, 40, 45 and 50) wide, transverse, almost semicircular, glabrous, shiny, approximately as wide as base of elytra, widest at base. Side borders wide. Posterior angles distinct, anterior angles indistinct, rounded, base bisinuate. Margins distinct throughout their entire length. Dorsal surface punctuate. Elytra glabrous, oval and wide, shiny with punctuation; side margins relatively broad. Ratio BL/EW usually less than 2, always less than 2.2; ratio EL/EW usually less than 1.5; always less than 1.6. Elytral striae almost with rows of punctures. Elytral intervals with distinct punctuation. Elytral epipleura well-developed, relatively wide, regularly narrowing to ventrite 1, than running parallel. Scutellum triangular with sparse punctures. Ventral side of body dark, abdomen five-segmented with or without punctuation and microgranulation, matte or shiny. Legs short, narrow, tibiae narrow, distinctly narrower than femora, normal

without teeth, impressions and depressions. Anterior and middle tarsomeres 4 and posterior tarsomere 3 distinctly widened and lobed. Male genitalia (as in Figs 4, 5, 9, 10, 14, 15, 22, 23, 27, 28, 32, 33, 37, 38, 42, 43, 47, 48, 52 and 53). Gender feminine.

Females without distinct differences on dorsal surface, only space between eyes slightly wider than those in male. Antennomeres 4-10 less serrate than those in male.

Differential diagnosis. (for details see the key above). Species of the genus *Liodocistela* Pic, 1930 differs from species of similar genera (*Borbochara* Novák, 2009, *Borboresthes* Fairmaire, 1897, *Cistelopsis* Fairmaire, 1896, *Macrocistelopsis* Pic, 1956, *Microsthes* Novák, 2011 and *Ommatochara* Borchmann, 1932), by the dorsal surface glabrous, oval and convex body. Species of other genera have dorsal surface setaceous, and/or body elongate oval or egg-shaped and/or more flat. Species of *Liodocistela* differ from species of the most similar genus *Stilbocistela* Borchann, 1932 by the shape of pronotum, with indistinct anterior angles and rounded anterior margin in *Liodocistela* species, while species of *Stilbocistela* have more or less distinct anterior angles and more or less straight anterior margin.

Remark. Genus *Liodocistela* Pic, 1930 was described as a subgenus of the genus *Cistelopsis* Fairmaire, 1896 by Pic (1930); it is presently raised from the level of subgenus, to the same taxonomic level with similar genera *Cistelopsis* Fairmaire, 1896 and *Stilbocistela* Borchann, 1932.

Distribution. India, Indonesia, Laos, Nepal, Thailand.

KEY TO MALES OF THE GENUS LIODOCISTELA PIC, 1930

1(2)	Elytra unicolour brown
2(1)	Elytra bicolour, dark with four large red spots. Habitus as in Fig. 29; head and pronotum as in Fig. 30;
2(4)	antenna as in Fig. 51; aedeagus as in Figs 52 and 55. Laos and ThailandLioaocisteia maculata sp. nov.
3(4)	Space between eyes wide, slightly wider than length of antennomere 2.
4(3)	Space between eyes very narrow, eyes almost not separated one from another. Habitus as in Fig. 6; head and pronotum as in Fig. 7; antenna as in Fig. 8; aedeagus as in Fig. 9 and 10. Indonesia (Sumatra isl.)
	Liodocistela bocaki sp. nov.
5(6)	Antennomere 2 longer than antennomere 3. Habitus as in Fig. 11; head and pronotum as in Fig. 12; antenna
	as in Fig. 13; aedeagus as in Figs 14 and 15. Nepal Liodocistela brancuccii sp. nov.
6(5)	Antennomere 2 as long as or shorter than antennomere 3
7(8)	Space between eyes narrow, distinctly narrower than length of antenomere 1
8(7)	Space between eyes wide, as wide as or wider than length of antennomere 1
9(10)	Space between eyes distinctly wider than length of antennomere 1. Habitus as in Fig. 1; head and pronotum as in Fig. 2; antenna as in Fig. 3; aedeagus as in Figs 4 and 5. India (Maharashtra state)
	Lidocistela bezdeki sp. nov
10(9)	Space between eyes as wide as length of antennomere 1
11(12)	Punctuation of pronotum relatively dense. Habitus as in Fig. 19; head and pronotum as in Fig. 20; antenna
	as in Fig. 21; aedeagus as in Figs 22 and 23. India (Maharashtra state) Liodocistela kejvali sp. nov.
12(11)	Punctuation of pronotum relatively sparse
13(14)	Pronotum long and narrow, PI higher. Habitus as in Fig. 24; head and pronotum as in Fig. 25; antenna as in
	Fig. 26; aedeagus as in Figs 27 and 28. India (Tamil Nadu) Liodocistela lubosi sp. nov.
14(13)	Pronotum short and wide, PI lower. Nepal Liodocistela weigeli (Novák, 2007) comb. nov.
15(16)	Antennomere 3 distinctly longer than antennomere 2

16(15)	Antennomere 3 approximately as long as antennomere 2. Habitus as in Fig. 44; head and pronotum as in Fig. 45; antenna as in Fig. 46; aedeagus as in Figs 47 and 48. India (Darjeeling and Sikkim)
	Liodocistela raii sp. nov.
17(18)	Rows of punctures in elytral striae clearly distinct
18(17)	All rows of punctures in elytral striae not clearly distinct
19(20)	Head with coarse punctures; elytral suture with same colour as elytron itself. Habitus as in Fig. 34; head and pronotum as in Fig. 35; antenna as in Fig. 36; aedeagus as in Figs 37 and 38. India (Orissa state).
	<i>Liodocistela majeri</i> sp. nov.
20(19)	Head with shallow punctures; elytral suture darker than elytron itself. Habitus as in Fig. 51; head and pronotum as in Fig. 52; antenna as in Fig. 53; aedeagus as in Figs 54 and 55. India (Uttaranchal state) Liodocistela tryznai sp. nov.
21(22)	Punctuation of pronotum relatively sparse; elytral suture darker than elytron itself. Habitus as in Fig. 39; head and pronotum as in Fig. 40; antenna as in Fig. 41; aedeagus as in Figs 42 and 43. India (Kerala) Liodocistela pacholatkoi sp. nov.
22(21)	Punctuation of pronotum relatively dense; elytral suture with same colour as elytron itself. Habitus as in Fig.

Table 1: Differences between species of Liodocistela Pic

Elytra bicolour	Elytra unicolour	Eyes almost adjacent one to another	Space between eyes wider than ant. 2	Space between eyes as wide as or wider than ant. 1	Space between eyes narrower than ant. 1	Ant. 3 as long as ant. 2	Ant. 3 longer than ant. 2	Rows of punct. in el. striae indistinct
L. maculata	All other	L. bocaki L. maculata	All other	L. bezdeki L. kejvali L. lubosi L. weigeli	L. instriata L. majeri L. pacholatkoi L. raii L. tryznai	L. raii	L. instriata L. majeriL. pacholatkoi L. tryznai	L. brancuccii L. instriata L. pacholatkoi

Liodocistela bezdeki sp. nov. (Figs 1-5)

Type locality. India W, Maharashtra state, Mahabaleshwar env., 70 km SSW Pune, 1400 m.

Type material. Holotype (\Diamond): wl: INDIA W, 30.ix.-2.x.2005, / Maharashtra state, / Mahabaleshwar env., / 70 km SSW of Pune, / 1400 m, J. Bezděk leg. [pb], (NMPC). The type is provided with a printed red label: Liodocistela bezdeki sp. nov. / HOLOTYPUS / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 1, oval, convex, dorsal surface dark brown, shiny, glabrous, BL 4.47 mm. Widest near middle of elytral length; BL/EW 1.89.

Head (Fig. 2). Dark brown, wide, short, basal part glabrous and shiny with distinct punctuation; clypeus with short and sparse pale brown setae. HW 1.05 mm; HW/PW 0.54. HL 0.25 mm (visible part). Eyes large, transverse, deeply excised, space between eyes narrow, slightly wider than length of antennomere 1; OI equal to 23.14.

Antenna (Fig. 3). Relatively short, with short setation, AL 2.81 mm, AL/BL 0.63. Antennomeres 1-3 brown, slightly shiny; antennomeres 4-11 black, matte with distinct punctuation; antennomeres 4-10 distinctly serrate. Antennomere 2 shortest, antennomere 3 only slightly longer than antennomere 2. Ultimate antennomere rounded at apex. RLA (1-11): 1.42 : 0.77 : 1.00 : 2.12 : 2.23 : 2.39 : 2.46 : 2.54 : 2.62 : 2.31 : 2.58. RL/WA (1-11): 1.42 : 1.05 : 1.24 : 1.67 : 1.71 : 1.77 : 1.94 : 2.06 : 2.19 : 2.14 : 2.79.

Maxillary palpus. Ultimate palpomere matte with microgranulation, triangular, axe-shaped.

Pronotum (Fig. 2). Glabrous, shiny, unicoloured dark brown, transverse, semicircular. PL 1.02 mm; PW 1.95 mm. PI equal to 52.31. Border lines complete, base bisinuate. Posterior angles rectangular, anterior margin rounded, angles indistinct. Dorsal surface with very fine microgranulation, shiny with relatively dense punctuation, interspaces between punctures broad.

Ventral side of body. Brown, with punctures. Abdomen brown, with microgranulation and rugosities, ventrites 3-5 slightly darker than ventrites 1 and 2.

Elytra. Oval, brown, glabrous, shiny, widest near middle. Side borders wide. EL 3.20 mm. EW 2.37 mm. EL/EW 1.35. Elytral striae with distinct rows of small-sized punctures. Elytral intervals with relatively dense punctures, slightly smaller than those in striae.

Scutellum. Relatively large, triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs with short pale brown setation and microgranulation. Tibia with distinct punctuation, distinctly darker than brown femora and tarsi, slightly dilated anteriorly. Protarsomeres 3 and 4, mesotarsomere 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.77 : 0.77 : 1.45 : 3.11 (protarsus), 1.00 : 0.51 : 0.36 : 0.33 : 0.98 (mesotarsus), and 1.00 : 0.36 : 0.49 : 0.82 (metatarsus).



Figs 1-5: *Liodocistela bezdeki* sp. nov. (male holotype): 1- Habitus; 2- head and pronotum; 3- antenna; 4- aedeagus, dorsal view; 5- aedeagus, lateral view.

Both anterior tarsal claws with 5 teeth.

Aedeagus (Figs 4, 5). Relatively long, pale brown, shiny. Basal half of basal piece rounded laterally, apical part of basal piece straight laterally and slightly narrowing dorsally. Apical piece narrow, slightly beak-shaped laterally. Ratio of length of apical piece to length of basal piece 1: 4.15.

Female unknown.

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela bezdeki* sp. nov. is clearly different from similar species *Liodocistela kejvali* sp. nov., *Liodocistela lubosi* sp. nov. and *Liodocistela weigeli* (Novák, 2007) mainly by the space between eyes distinctly wider than length of antennomere 1; while *L. kejvali*, *L. lubosi* and *L. weigeli* have space between eyes as wide as length of antennomere 1.

Etymology. New species is dedicated to the collector Jan Bezděk (Brno, Czech Republic), well-known specialist in Chrysomelidae.

Distribution. India (Maharashtra state).

Liodocistela bocaki sp. nov.

(Figs 6-10)

Type locality. Indonesia, Sumatra isl., Brastagi, G. Sibayak, 1450-1900 m.

Type material. Holotype (♂): wl: SUMATRA(N.), BRASTAGI / G. Sibayak, 1450-1900m / 19.-23.II.1991 / Bocák & Bocáková lgt. [pb], (NMBS). Paratype (♀): wl: SUMATRA(W.), G. Singga- / lang S of BUKITTINGSI / 14.-16. II.1991, 1300 m / Bocák & Bocáková lgt. [pb], (VNPC). The types are provided with printed red labels: Liodocistela bocaki sp. nov. / HOLOTYPUS [or PARATYPUS resp.] / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 6, oval, convex, dorsal surface dark brown, shiny, glabrous, BL 4.15 mm. Widest near middle of elytral length; BL/EW 1.58.

Head (Fig. 7). Dark brown, wide, short, basal part matte with distinct microgranulation; clypeus pale brown with sparse pale brown setae. HW 0.86 mm; HW/PW 0.42. HL 0.21 mm (visible part). Eyes large, transverse, deeply excised, space between eyes very narrow, eyes almost adjacent one to another, distinctly narrower than length of antennomere 2; OI equal to 6.74.

Antenna (Fig. 8). Relatively short, with short setation, AL 2.34 mm; AL/BL 0.64. Antennomeres 1-3 brown, slightly shiny; antennomeres 4-11 black, matte with distinct punctuation; antennomeres 4-10 distinctly serrate. Antennomere 2 shortest, antennomere 3 only slightly longer than antennomere 2. Ultimate antennomere rounded at apex. RLA (1-11): 1.48 : 0.61 : 1.00 : 2.00 : 2.17 : 2.17 : 2.26 : 2.35 : 2.26 : 2.30 : 2.48. RL/WA (1-11): 1.79 : 0.88 : 1.44 : 1.59 : 1.92 : 1.85 : 1.73 : 1.64 : 1.68 : 1.71 : 2.38.

Maxillary palpus. Pale brown, ultimate palpomere matte with microgranulation, triangular, axe-shaped.

Pronotum (Fig. 7). Glabrous, shiny, unicoloured dark brown, wide, more transverse than semicircular. PL 0.98 mm; PW 2.03 mm. PI equal to 48.28. Border lines complete, base bisinuate. Posterior corners rectangular, anterior margin straight, anterior angles



Figs 6-10: *Liodocistela bocaki* sp. nov. (male holotype): 6- Habitus; 7- head and pronotum; 8- antenna; 9- aedeagus, dorsal view; 10- aedeagus, lateral view.

rounded, indistinct. Dorsal surface without microgranulation, shiny, with relatively sparse punctuation, punctures small-sized, interspaces between punctures very broad.

Ventral side of body. Brown, slightly paler than elytra, with punctures. Abdomen brown, without microgranulation, with rugosities, ventrites 4, 5 slightly darker than ventrites 1-3.

Elytra. Oval, brown, with two indistinct, oval, paler spots on each elytron, glabrous, shiny, widest near middle, with relatively dense small-sized punctuation. Side borders wide. EL 3.16 mm. EW 2.63 mm. EL/EW 1.20. Elytral striae indistinct, without rows of punctures.

Scutellum. Relatively large, triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, paler than elytra itself, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs. Tarsi slightly paler than reddish-brown tibia and femora, with short pale brown setation and microgranulation. Protarsomeres 3 and 4, mesotarsomere 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.41 : 0.44 : 1.19 : 2.07 (protarsus), 1.00 : 0.35 : 0.38 : 0.41 : 0.76 (mesotarsus).

Both anterior tarsal claws with 5 teeth.

Aedeagus (Figs 9, 10). Relatively short, pale brown. Basal piece rounded laterally and slightly narrowing dorsally. Apical piece narrow, elongate and beak-shaped laterally. Ratio of length of apical piece to length of basal piece 1: 2.60.

Female without distinct differences, only antennomeres 4-10 distinctly less serrate than in male. Spots on elytra more distinct.

Differential diagnosis. (For details see the key above and table 1). *Liodocistela bocaki* sp. nov. is clearly different from similar species *Liodocistela maculata* sp. nov. mainly by unicolour elytra; while *L. maculata* has elytra bicolour.

Etymology. New species is dedicated to the collector Ladislav Bocák (Olomouc, Czech Republic), well-known specialist in Lycidae.

Distribution. Indonesia (Sumatra isl.).

Liodocistela brancuccii sp. nov. (Figs 11-15)

Type locality. E-Nepal, Arun valley, Phalicot, 500-550m.

Type material. Holotype (\Im): wl: Phalicot 500m / 13.VI.1983 [pb] // wl: E-Nepal / Arun V. / M. Brancucci [pb], (NMBS); Paratypes: (1 \Im 2 \Im \Im): wl: Phalicot / 13.VI.83 550m [hb] // wl: E-Nepal / Arun V. / M. Brancucci [pb], (NMBS, VNPC). The types are provided with printed red labels: Liodocistela brancuccii sp. nov. / HOLOTYPUS [or PARATYPUS resp.] / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 11, oval, convex, dorsal surface dark brown, shiny, glabrous, BL 3.64 mm. Widest near middle of elytral length; BL/EW 1.86.

Head (Fig. 12). Wide, short, basal part glabrous with distinct punctuation; anterior part and clypeus distinctly paler than basal part, with short and sparse pale brown setae. HW 0.88 mm; HW/PW 0.52. HL 0.19 mm (visible part). Eyes large, transverse, deeply excised, space between eyes very narrow, distinctly narrower than length of antennomere 1; OI equal to 10.93.

Antenna (Fig. 13). Relatively short, with short setation. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-7 dark brown, matte with distinct punctuation, distinctly serrate. Antennomere 3 shortest, antennomere 2 only slightly longer than antennomere 3. RLA (1-7): 1.94 : 1.19 : 1.00 : 3.00 : 3.44 : 3.56 : 4.06. RL/WA (1-7): 1.41 : 1.19 : 1.14 : 1.50 : 1.77 : 1.68 : 1.91.

Maxillary palpus. Pale brown, ultimate palpomere with microgranulation and pale brown setae, triangular, axe-shaped.

Pronotum (Fig. 12). Glabrous, shiny, unicoloured brown, wide, more transverse than semicircular. PL 0.82 mm; PW 1.68 mm. PI equal to 48.42. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface without distinct microgranulation, shiny with relatively sparse punctuation, interspaces between punctures broad.

Ventral side of body brown. Abdomen brown, ventrites with microgranulation and sparse small punctures.

Elytra. Oval, brown, glabrous, shiny, widest near middle. Side borders wide. EL 2.63 mm. EW 1.96 mm. EL/EW 1.34. Elytral striae with distinct rows of small-sized punctures. Elytral intervals with relatively dense punctures.

Scutellum. Triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs brown with pale brown setation. Tibia with distinct punctuation. Protarsomere 3 and 4, mesotarsomere 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.62 : 0.62 : 0.95 : 2.14 (protarsus).

Both anterior tarsal claws with 5 teeth.



Figs 11-15: *Liodocistela brancuccii* sp. nov.: 11- Habitus of male holotype; 12- head and pronotum of male holotype; 13- antenna; 14- aedeagus, dorsal view; 15- aedeagus, lateral view.

Aedeagus (Figs 14, 15). Short, pale brown, slightly shiny. Basal piece rounded laterally and narrowing dorsally. Apical piece narrow laterally, narrowly triangular dorsally. Ratio of length of apical piece to length of basal piece 1: 3.38.

Female. Dorsal surface without distinct differences, only space between eyes wider than those in male and antennomeres 4-9 less serrate than those in male.

Variation. Measurements: mean (minimum - maximum). Males (n=2). BL 3.79 mm (3.64-3.94 mm); HL 0.22 mm (0.19-0.25 mm); HW 0.92 mm (0.88-0.94 mm); OI 10.53 (10.13-10.93), PL 0.85 mm (0.82-0.88 mm); PW 1.74 mm (1.68-1.80 mm); PI 48.66 (48.42-48.89); EL 2.72 mm (2.63-2.81 mm); EW 2.00 mm (1.96-2.04 mm). Females (n=2). BL 4.29 mm (4.14-4.24 mm); HL 0.28 mm (0.24-0.32 mm); HW 1.04 mm (1.00-1.08 mm); OI 31.12 (29.10-33.14), PL 0.91 mm (0.88-0.94 mm); PW 1.88 mm (1.84-1.92 mm); PI 48.40 (48.04-48.76); EL 3.10 mm (3.06-3.14 mm); EW 2.34 mm (2.30-2.38 mm).

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela brancucciii* sp. nov. is clearly different from all other similar species by combination of antennomere 3 shortest and indistinct rows of punctures in elytral striae.

Etymology. New species is dedicated to Michel Brancucci (†), last head of Department of entomology (NMBS).

Distribution. Nepal.

Liodocistela instriata (Pic, 1930) comb. nov. (Figs 16-18)

Cistelopsis instriata Pic, 1930: 23.

Type locality. India or., Madura.

Type species. Holotype by monotypy: wl: Madura / Ind. or. [pb] // wl: instriata / n sp [hb], (MNHN).

Type condition. Specimen glued on wl; left antenna incomplete (antennomeres 1-6); right antenna incomplete (antennomeres 1-7).

Redescription. Habitus as in Fig. 16, oval, convex, dorsal surface brown, shiny, glabrous, BL 4.14 mm. Widest near middle of elytral length; BL/EW 1.91. Head (as in Fig. 17). Wide, short, basal part glabrous with sparse punctuation; anterior part and clypeus distinctly paler than basal part, clypeus with short and sparse pale brown setae. HW 1.02 mm; HW/PW 0.67. HL 0.11 mm (visible part). Eyes large, transverse, deeply excised, space between eyes narrow, distinctly narrower than length of antennomere 1 or 3, approximately as wide as length of antennomere 2; OI equal to 14.97. Antenna (as in Fig. 18). Relatively short, with short setation, antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-7 dark brown, matte with distinct punctuation and distinctly serrate. Antennomere 2 shortest, antennomere 3 slightly longer than antennomere 2. Maxillary palpus pale brown, ultimate palpomere triangular, axe-shaped. Pronotum (as in Fig. 17). Glabrous, shiny, unicoloured brown, wide, transverse, semicircular. PL 0.85 mm; PW 1.53 mm. PI equal to 55.56. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface with distinct microgranulation, shiny with relatively dense





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punctuation, punctures small, interspaces between punctures distinctly wider than diameter of punctures. Elytra oval, brown, glabrous, slightly shiny, widest near middle, with dense punctuation, punctures small. Side borders wide. EL 3.18 mm. EW 2.17 mm. EL/EW 1.47. Elytral striae without distinct rows of punctures. Scutellum triangular, brown, as colour as elytron itself, glabrous, shiny with punctures. Ventral side of body and epipleura as colour as elytron itself. Legs pale brown with pale brown setation.

Distribution. India (Madura).

Liodocistela kejvali sp. nov. (Figs 19-23)

Type locality. India, Maharshtra state, environs of Mulshi near Pune, 18°29'N and 73°30 E.

Type material. Holotype (♂): wl: INDIA W, 7.-11.x.2005, / Maharashtra state, / 40 km W of Pune, / Mulshi env., J. Bezděk leg. [pb], (NMPC); Paratype: (♂): wl: INDIA, Maharastra, ca 30 / km of Pune, the valley / E of MULSHI, 18°29'N / 73°30 E, ca 700 m, 13.- / 16.vi.2006 Z. Kejval lgt. [pb], (VNPC). The types are provided with printed red labels: Liodocistela kejvali sp. nov. / HOLOTYPUS [or PARATYPUS resp.] / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 19, oval, convex, dorsal surface brown, shiny, glabrous, BL 4.82 mm. Widest near middle of elytral length; BL/EW 1.95.

Head (Fig. 20). Wide, short, basal part glabrous with distinct punctuation; anterior part and clypeus distinctly paler than basal part, clypeus with short and sparse pale brown setae. HW 1.11 mm; HW/PW 0.53. HL 0.37 mm (visible part). Eyes large, transverse, deeply excised, space between eyes narrow, as wide as length of antennomere 1; OI equal to 17.08.

Antenna (Fig. 21). Relatively short, with short setation, AL 2.83 mm, AL/BL 0.59. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-11 dark brown, matte with distinct punctuation, antennomeres 4-10 distinctly serrate. Antennomere 2 shortest, antennomere 3 only slightly longer than antennomere 2. Ultimate antennomere rounded in apex. RLA (1-11): 1.81 : 0.86 : 1.00 : 2.52 : 2.76 : 2.76 : 3.19 : 3.19 : 3.24 : 3.19 : 3.52. RL/WA (1-11): 2.11 : 1.00 : 1.24 : 2.21 : 1.66 : 1.49 : 1.91 : 1.91 : 2.19 : 1.86 : 2.64.

Maxillary palpus. Brown, ultimate palpomere with microgranulation and pale brown setae, triangular, axe-shaped.

Pronotum (Fig. 20). Glabrous, shiny, unicoloured brown, wide, transverse, semicircular. PL 0.93 mm; PW 1.90 mm. PI equal to 48.95. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface with distinct microgranulation, shiny with relatively dense punctuation, interspaces between punctures narrow, approximately as wide as diameter of punctures.

Ventral side of body brown as colour as dorsal surface. Abdomen brown, ventrites matte with microgranulation, ventrites 4 and 5 distinctly darker than ventrites 1-3.

Elytra. Oval, brown, glabrous, slightly shiny, widest near middle. Elytral suture distinctly darker. Side borders wide. EL 3.52 mm. EW 2.52 mm. EL/EW 1.40. Elytral striae with distinct rows of small-sized punctures. Elytral intervals with dense punctuation, punctures approximately with same diameter as those in striae.

Scutellum. Triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs brown with pale brown setation. Tibia with distinct punctuation and microgranulation. Protarsomere and mesotarsomere 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.82 : 0.86 : 1.59 : 2.05 (protarsus), 1.00 : 0.27 : 0.46 : 0.47 : 0.76 (mesotarsus), and 1.00 : 0.43 : 0.38 : 0.95 (metatarsus).

Both anterior tarsal claws with 5 teeth.

Aedeagus (Figs 22, 23). Short, pale brown, slightly shiny. Basal piece rounded laterally and narrowing dorsally. Apical piece narrow laterally and dorsally with drop-shaped apex. Ratio of length of apical piece to length of basal piece 1: 3.74.

Female unknown.

Variation. Measurements: mean (minimum - maximum). Males (n=2). BL 4.97 mm (4.82-5.12 mm); HL 0.40 mm (0.37-0.43 mm); HW 1.20 mm (1.11-1.29 mm); OI 17.53 (17.08-17.98), PL 1.00 mm (0.93-1.07 mm); PW 1.96 mm (1.90-2.01 mm); PI 51.09 (48.95-53.23); EL 3.57 mm (3.52-3.62 mm); EW 2.58 mm (2.52-2.64 mm).

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela kejvali* sp. nov. is clearly different from similar species *Liodocistela lubosi* sp. nov. and *Liodocistela weigeli* (Novák, 2007) mainly by dense punctuation of pronotum; while punctuation of pronotum of *L. lubosi* and *L. weigeli* is sparse.

Etymology. The new species is dedicated to one of the collectors - Zbyněk Kejval (Domažlice, Czech Republic), well-known specialist in Anthicidae.

Distribution. India (Maharshtra state).



and pronotum of holotype; 21- antenna; 22- aedeagus, dorsal view; 23aedeagus, lateral view.

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Liodocistela lubosi sp. nov. (Figs 24-28)

Type locality. South India, Tamil Nadu, 15 km SE of Kotagini, 11°22' N; 76°56' E, Kunchappanai.

Type material. Holotype (\Im): wl: S INDIA, TAMIL NADU; 1997 / 17.-22.v.;15km SE Kotagini / 11,22N 76,56E;Kunchappanai; / Dembický & Pacholátko leg. [pb], (DHBC); Paratypes: (10 $\Im \Im$ 10 $\Im \Im$): wl: same data as holotype [pb], (DHBC, VNPC). The types are provided with printed red labels: Liodocistela lubosi sp. nov. / HOLOTYPUS [or PARATYPUS resp.] / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 24, oval, convex, dorsal surface brown, shiny, glabrous, BL 4.99 mm. Widest near middle of elytral length; BL/EW 2.17.

Head (Fig. 25). Brown, wide, short, glabrous with distinct, sparse punctuation, shiny; clypeus distinctly paler than basal part, clypeus with short and sparse pale brown setae. HW 1.13 mm; HW/PW 0.61. HL 0.47 mm (visible part). Eyes large, transverse, deeply excised, space between eyes narrow, approximately as wide as length of antennomere 1; OI equal to 19.32.

Antenna (Fig. 26). Relatively short, with short setation, AL 2.99 mm, AL/BL 0.60. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-11 dark brown, matte with distinct punctuation, antennomeres 4-10 distinctly serrate. Antennomere 2 shortest, antennomere 3 only slightly longer than antennomere 2. Ultimate antennomere rounded in apex. RLA (1-11): 1.71 : 0.96 : 1.00 : 2.58 : 2.54 : 2.58 : 2.83 : 2.88 : 2.79 : 2.83 : 3.13. RL/WA (1-11): 1.86 : 1.21 : 1.33 : 2.48 : 1.85 : 1.44 : 1.62 : 1.61 : 1.63 : 1.84 : 2.59.

Maxillary palpus. Brown, ultimate palpomere with microgranulation, triangular, axe-shaped.

Pronotum (Fig. 25). Glabrous, shiny, unicoloured brown, wide, transverse, semicircular. PL 0.94 mm; PW 1.85 mm. PI equal to 50.81. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface without distinct microgranulation, shiny with relatively sparse punctuation, interspaces between punctures broad.

Ventral side of body brown as colour as dorsal surface. Abdomen brown, glabrous, shiny, with rugosities and sparse, small punctures, ventrites 4 and 5 distinctly darker than ventrites 1-3.

Elytra. Oval, brown, glabrous, shiny, widest near middle. Elytral suture distinctly darker. Side borders wide. EL 3.58 mm. EW 2.30 mm. EL/EW 1.56. Elytral striae with distinct rows of small-sized punctures. Elytral intervals with dense punctuation, punctures slightly smaller than those in striae.

Scutellum. Triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs brown with pale brown setation. Tibia with distinct punctuation and microgranulation slightly dilated anteriorly. Protarsomere and mesotarsomere 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.96 : 1.25 : 1.46 : 2.82 (protarsus), 1.00 : 0.39 : 0.44 : 0.58 : 1.34 (mesotarsus), and 1.00 : 0.37 : 0.47 : 0.80 (metatarsus).

Both anterior tarsal claws with 5 teeth.



Figs 24-28: *Liodocistela lubosi* sp. nov.: 24- Habitus of holotype; 25- head and pronotum of holotype; 26- antenna; 27- aedeagus, dorsal view; 28- aedeagus, lateral view.

Aedeagus (Figs 27, 28). Relatively large, pale brown, slightly shiny. Basal piece rounded laterally and narrowing dorsally. Apical piece narrow laterally and dorsally with rounded apex. Ratio of length of apical piece to length of basal piece 1: 4.60.

Female. The dorsal surface without distinct differences, only space between eyes distinctly wider than that in male and antennomeres 4-10 distinctly less serrate than those in male.

Variation. Measurements: mean (minimum - maximum). Males (n=11). BL 4.35 mm (3.59-4.99 mm); HL 0.40 mm (0.32-0.47 mm); HW 1.02 mm (0.84-1.13 mm); OI 20.19 (18.75-21.12), PL 0.82 mm (0.71-0.94 mm); PW 1.82 mm (1.71-1.85 mm); PI 51.42 (49.08-52.88); EL 3.24 mm (2.56-3.58 mm); EW 2.04 mm (1.85-2.30 mm). Females (n=10). BL 4.48 mm (4.08-5.06 mm); HL 0.44 mm (0.32-0.56 mm); HW 1.08 mm (0.94-1.18 mm); OI 32.05 (28.75-34.17), PL 0.92 mm (0.81-1.00 mm); PW 1.82 mm (1.71-1.92 mm); PI 49.20 (48.08-53.35); EL 3.52 mm (3.00-3.91 mm); EW 2.14 mm (1.99-2.58 mm).

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela lubosi* sp. nov. is clearly different from similar species *Liodocistela kejvali* sp. nov. mainly by sparse punctuation of pronotum; while punctuation of pronotum of *L. kejvali* is dense. *L. lubosi* clearly differs from similar species *Liodocistela weigeli* (Novák, 2007) mainly by long and narrow pronotum; while *L. weigeli* has pronotum wide and short.

Etymology. New species is dedicated to one of the collectors - Luboš Dembický (Brno, Czech Republic), well-known specialist in Cerambycidae, after his first name.

Distribution. India (Tamil Nadu).

Liodocistela maculata sp. nov. (Figs 29-33)

Type locality. Laos, Champasak prov., Bolavens Plateau, near Ban Lak, 15°09.8'N, 106°09.5'E, 1070 m.

Type material. Holotype (\mathcal{S}): wl: LAOS, CHAMPASAK prov. / Bolavens Plateau / ca 3 km SE Ban Lak 40 [vill.] / coffee plantation-forest (at light) / 15°09.8'N, 106°09.5'E, 1070 m / Jiří Hájek leg. 9.v.2010 [pb], (NMPC); Paratypes: (1 spec.): same data as holotype, (VNPC); (26 spec.): wl: THAI, NE, Loei prov., Phu I / Rua N. P., 1100m, / 17°30'N, 101°21'E, 6- / 9.iv.1999, D. Hauck leg. [pb], (DHBC, NMPC, VNPC). The types are provided with printed red labels: Liodocistela maculata sp. nov. / HOLOTYPUS [or PARATYPUS resp.] / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 29, oval, convex, dorsal surface bicolour, shiny, glabrous, BL 3.31 mm. Widest near middle of elytral length; BL/EW 1.82.

Head (Fig. 30). Wide, short, brown, anterior part distinctly darker than clypeus, with very small and very sparse punctures, anterior part and clypeus with sparse pale brown setae. HW 0.81 mm; HW/PW 0.52. HL 0.15 mm (visible part). Eyes large, transverse, deeply excised, eyes almost close together; OI equal to 10.18.

Antenna (Fig. 31). Relatively short, with short setation, AL 2.16 mm, AL/BL 0.65. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-11 dark brown, matte, with distinct punctuation, antennomeres 4-10 distinctly serrate. Antennomere 3 shortest, antennomere 2 only slightly longer than antennomere 3. Ultimate antennomere rounded at apex. RLA (1-11): 1.94 : 1.12 : 1.00 : 2.18 : 2.47 : 2.65 : 2.88 : 3.12 : 2.88 : 2.94 : 3.18. RL/ WA (1-11): 1.65 : 1.19 : 1.31 : 1.68 : 1.91 : 1.80 : 1.75 : 1.89 : 1.75 : 2.00 : 2.57.

Maxillary palpus. Brown, ultimate palpomere with microgranulation and long, pale brown setae, triangular, axe-shaped.

Pronotum (Fig. 30). Glabrous, shiny, unicolour brown, wide, more transverse than semicircular. PL 0.75 mm; PW 1.57 mm. PI equal to 47.50. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface without distinct microgranulation, shiny with sparse punctuation, punctures very small.

Ventral side of body brown with punctuation. Abdomen with microgranulation, rugosities and sparse punctuation, punctures very small, ventrites 3-5 distinctly darker than ventrites 1 and 2.

Elytra. Oval, bicolour, dark brown with four large red spots (as in Fig. 29), glabrous, shiny, widest near middle. Side borders wide. EL 2.41 mm. EW 1.82 mm. EL/EW 1.32. Rows of punctures in elytral striae not clearly distinct. Elytral intervals with dense punctuation.

Scutellum. Triangular, dark brown, glabrous, shiny, with a few small punctures.

Elytral epipleura. Dark brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs brown with pale brown setation. Tibia with distinct punctuation and microgranulation. Protarsomere and mesotarsomere 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.52 : 0.70 : 0.96 : 1.65 (protarsus), 1.00 : 0.56 : 0.44 : 0.58 : 1.11 (mesotarsus), and 1.00 : 0.29 : 0.21 : 0.61 (metatarsus).

Both anterior tarsal claws with 4 teeth.

Aedeagus (Figs 32, 33). Short, pale brown, slightly shiny. Basal piece almost straight, very slightly rounded laterally and distinctly narrowing dorsally. Apical piece narrow,



elongate triangular laterally and dorsally. Ratio of length of apical piece to length of basal piece 1: 3.16.

Female. Dorsal surface without distinct differences, only antennomeres 4-10 less serrate than those in male.

Variation. Measurements: mean (minimum - maximum). Specimens (n=28). BL 3.44 mm (3.12-4.14 mm); HL 0.24 mm (0.15-0.28 mm); HW 0.80 mm (0.64-1.02 mm); OI 10.08 (8.75-14.17), PL 0.72 mm (0.64-0.98 mm); PW 1.82 mm (1.71-1.92 mm); PI 48.20 (46.08-49.52); EL 2.48 mm (2.33-2.88 mm); EW 1.88 mm (1.77-2.18 mm).

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela maculata* sp. nov. is clearly different from all the other similar species by elytra bicolour.

Etymology. The name indicates spots (maculae) of the elytral dorsal surface.

Distribution. Laos, Thailand.

Liodocistela majeri sp. nov. (Figs 34-38)

Type locality. India, Orissa state, Similipal N. P., Lulung, 21°56'N, 86°32'E.

Type material. Holotype (\mathcal{J}): wl: INDIA: Orissa state, / Similipal N.P., Lulung, / 21°56'N, 86°32'E, / 25.v.-13. vi.1998, / Karel & Simon Majer leg. [pb], (NMBS); Paratype: (1 \mathcal{Q}): wl: same data as holotype [pb], (VNPC). The types are provided with printed red labels: Liodocistela majeri sp. nov. / HOLOTYPUS [or PARATYPUS resp.] / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 34, oval, convex, dorsal surface brown, shiny, glabrous, BL 4.08 mm. Widest near middle of elytral length; BL/EW 1.92.

Head (Fig. 35). Wide, short, with coarse and dense punctuation, shiny, basal part glabrous; anterior part and clypeus with sparse and long pale brown setation, distinctly paler than basal part, clypeus without punctures. HW 1.03 mm; HW/PW 0.57. HL 0.34 mm (visible part). Eyes large, transverse, deeply excised, space between eyes narrow, distinctly narrower than length of antennomere 1; OI equal to 11.87.

Antenna (Fig. 36). Relatively short, with short setation. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-8 brown, matte with distinct punctuation and serrate. Antennomere 2 shortest, antennomere 3 only slightly longer than antennomere 2. RLA (1-8): 1.85 : 0.90 : 1.00 : 1.27 : 1.19 : 2.60 : 2.55 : 2.95. RL/WA (1-8): 1.68 : 1.39 : 1.33 : 1.81 : 1.47 : 1.58 : 1.70 : 1.74.

Maxillary palpus. Pale brown, ultimate palpomere with microgranulation and pale brown setae, triangular, axe-shaped.

Pronotum (Fig. 35). Glabrous, shiny, unicoloured brown, wide, transverse, semicircular. PL 0.89 mm; PW 1.82 mm. PI equal to 49.14. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface without microgranulation, shiny with relatively dense punctuation, interspaces between punctures wider than diameter of punctures.

Ventral side of body brown. Abdomen brown, slightly shiny, with very fine microgranulation and very sparse punctures, ventrites 4 and 5 distinctly darker than ventrites 1-3.

Elytra. Oval, brown, glabrous, shiny, widest near middle. Side borders wide. EL 2.85 mm. EW 2.13 mm. EL/EW 1.34. Elytral striae with distinct rows of punctures. Elytral intervals with dense punctuation, punctures slightly smaller than those in striae.

Scutellum. Triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs brown with pale brown setation. Tibia with distinct punctuation and microgranulation. Protarsomere and mesotarsomere 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.52 : 0.90 : 1.00 : 1.59 (protarsus), 1.00 : 0.45 : 0.48 : 0.65 : 1.13 (mesotarsus), and 1.00 : 0.72 : 0.33 : 0.62 (metatarsus).

Both anterior tarsal claws with 5 teeth.

Aedeagus (Figs 37, 38). Relatively large, pale brown, slightly shiny. Basal piece rounded laterally and narrowing dorsally. Apical piece narrow, slightly beak-shaped laterally and with drop-shaped apex dorsally. Ratio of length of apical piece to length of basal piece 1: 5.00.

Female. The dorsal surface without distinct differences, only space between eyes distinctly wider than those in male and antennomeres 4-8 less serrate than those in male.

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela majeri* sp. nov. is clearly different from similar species *Liodocistela tryznai* sp. nov. mainly by head with coarse punctures and elytral suture as colour as elytron itself; while *L. tryznai* has elytral suture distinctly darker and head with shallow punctures.



Figs 34-38: *Liodocistela majeri* sp. nov.: 34- Habitus of holotype; 35- head and pronotum of holotype; 36- antenna; 37- aedeagus, dorsal view; 38- aedeagus, lateral view.

Etymology. New species is dedicated to one of the collectors - Karel Majer (†) (Brno, Czech Republic), well-known specialist in Dasytidae.

Distribution. India (Orissa state).

Liodocistela pacholatkoi sp. nov. (Figs 39-43)

Type locality. South India, Kerala, Kallar valley near Munnar, 10°02'N, 76°58'E.

Type material. Holotype (\mathcal{C}): wl: S INDIA, KERALA; 1250m; / 15km SW Munnar; 1.-9.v.1997 / 10,02N 76,58E;Kallar Valley; / Dembický & Pacholátko leg. [pb], (DHBC). The type is provided with a printed red label: Liodocistela pacholatkoi sp. nov. / HOLOTYPUS / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 39, oval, convex, dorsal surface brown, shiny, glabrous, BL 3.86 mm. Widest near middle of elytral length; BL/EW 1.78.

Head (Fig. 40). Wide, short, glabrous with distinct punctuation; anterior part and clypeus slightly paler than basal part. HW 0.95 mm; HW/PW 0.53. HL 0.38 mm (visible part). Eyes large, transverse, deeply excised, space between eyes very narrow, narrower than length of antennomere 1, approximately as long as length of antennomere 3; OI equal to 12.64.

Antenna (Fig. 41). Relatively short, with short setation, AL 2.28 mm, AL/BL 0.59. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-11 dark brown, matte with distinct punctuation, antennomeres 4-10 distinctly serrate. Antennomere 2 shortest, antennomere 3 only slightly longer than antennomere 2. Ultimate antennomere rounded in



apex. RLA (1-11): 2.06 : 0.94 : 1.00 : 2.81 : 2.75 : 3.25 : 3.19 : 3.38 : 3.19 : 3.25 : 3.75. RL/ WA (1-11): 1.50 : 1.00 : 1.07 : 1.67 : 1.63 : 1.73 : 1.82 : 1.93 : 1.82 : 2.08 : 2.61.

Maxillary palpus. Pale brown, ultimate palpomere with microgranulation, triangular, axeshaped.

Pronotum (Fig. 40). Glabrous, shiny, unicolour brown, wide, more transverse than semicircular. PL 0.75 mm; PW 1.79 mm. PI equal to 41.88. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface without distinct microgranulation, shiny with relatively sparse and small punctuation, interspaces between punctures distinctly wider than diameter of punctures.

Ventral side of body brown as colour as dorsal surface. Ventrites 1-3 pale brown, shiny with sparse punctuation, punctures small, ventrites 4 and 5 dark brown, matter, with microgranulation.

Elytra. Oval, brown, glabrous, shiny, widest near middle. Elytral suture distinctly darker. Side borders wide. EL 2.73 mm. EW 2.17 mm. EL/EW 1.26. All rows of small-sized punctures in elytral striae not clearly distinct. Elytral intervals with dense punctuation, punctures approximately with same diameter as those in striae.

Scutellum. Triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs brown, slightly paler than dorsal surface, with pale brown setation. Tibia with distinct punctuation and microgranulation slightly dilated anteriorly. Protarsomere 3 and 4, mesotarsomere 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.90 : 1.11 : 1.37 : 3.00 (protarsus), 1.00 : 0.59 : 0.64 : 0.69 : 1.31 (mesotarsus), and 1.00 : 0.41 : 0.50 : 0.97 (metatarsus).

Both anterior tarsal claws with 5 teeth.

Aedeagus (Figs 42, 43). Pale brown, slightly shiny. Basal piece rounded laterally and narrowing dorsally. Apical piece narrowly elongate, slightly beak-shaped laterally and roundly triangular and elongate dorsally. Ratio of length of apical piece to length of basal piece 1: 3.37.

Female unknown.

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela pacholatkoi* sp. nov. is clearly different from similar species *Liodocistela instriata* (Pic, 1930) mainly by sparse punctuation of pronotum and elytral suture distinctly darker than elytron itself; while *L. instriata* has elytral suture with same colour as elytron itself and punctuation of pronotum is dense.

Etymology. The new species is dedicated to one of the collectors - Petr Pacholátko (Brno, Czech Republic).

Distribution. India (Kerala).

Liodocistela raii sp. nov. (Figs 44-48)

Type locality. India, Sikkim, Rangali, 1500 m.

Type material. Holotype (♂): wl: Ralie 780m / 2.5.1981 [pb] // wl: Darjeeling Distr / India Bhakta B. [pb], (NMBS); Paratypes: (1 spec.): wl: Serhuke Road [pb] / 30.VII.78 [hb] // wl: Darjeeling Distr. / Bhakta B. Ch. [pb], (VNPC); (1 spec.): wl: Suruk / 900 m / 18.IV.85 [pb] // wl: Indien / Darjeeling D. / Ch. J. Rai [pb], (NMBS); (3 spec.): wl: Rangali / 1500m / 9.VII.1985 [pb] // wl: India / Sikkim / Ch. J. Rai [pb], (NMBS, VNPC); (1 spec.): wl: Suntuk (KPG) / 900m / 14.V.1986 [pb] // wl: Indien / Darjeeling D. / Ch. J. Rai [pb], (VNPC); (1 spec.): wl: Suntuk (KPG) / 900m / 14.V.1986 [pb] // wl: Indien / Darjeeling D. / Ch. J. Rai [pb], (VNPC); (1 spec.): wl: Pankha Sari / 1300 m [pb] 8.VIII. [hb] // wl: Darjeeling Distr. / W.B.India 197 [pb] 8 [hb], (NMBS); (1 spec.): wl: Chongay 1700m / 20.IV.1985 [pb] // wl: India / Sikkim / Ch. J. Rai [pb], (VNPC); (3 spec.): wl: Darbhu / 25.VII.1985 [pb] // wl: Indien / Darjeeling D. / Ch. J. Rai [pb], (NMBS, VNPC); 13.VIII.78 [hb] // wl: Indien / Darjeeling D. / Ch. J. Rai [pb], (NMBS, VNPC); (1 spec.): wl: Chongay 1700m / 20.IV.1985 [pb] // wl: India / Sikkim / Ch. J. Rai [pb], (VNPC); (3 spec.): wl: Darbhu / 25.VII.1985 [pb] // wl: Indien / Darjeeling D. / Ch. J. Rai [pb], (NMBS, VNPC);); (2 spec.): wl: Nowri Khola / 2200 m [pb] 13.VIII.78 [hb] // wl: Darjeeling Distr. / Bhakta B.Ch. [pb], (NMBS).

The types are provided with printed red labels: Liodocistela raii sp. nov. / HOLOTYPUS [or PARATYPUS resp.] / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 44, oval, convex, dorsal surface brown, shiny, glabrous, BL 4.51 mm. Widest near middle of elytral length; BL/EW 1.88.

Head (Fig. 45). Wide, short, glabrous with distinct punctuation and microgranulation; anterior part and clypeus distinctly paler than basal part, clypeus with short and sparse pale brown setae. HW 1.04 mm; HW/PW 0.49. HL 0.31 (visible part). Eyes large, transverse, deeply excised, space between eyes narrow, as wide as length of antennomere 2; OI equal to 15.29.

Antenna (Fig. 46). Relatively short, with short, pale brown setation, AL (1-10) 2.18 mm, AL/BL 0.48. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-10 slightly



Figs 44-48: *Liodocistela raii* sp. nov.: 44- Habitus of holotype; 45- head and pronotum of holotype; 46- antenna; 47- aedeagus, dorsal view; 48- aedeagus, lateral view.

darker than antennomeres 1-3, matte with distinct punctuation, antennomeres 4-10 distinctly serrate. Antennomere 2 and 3 shortest, with the same length. Ultimate antennomere rounded in apex. RLA (1-10): 1.95 : 1.00 : 1.00 : 2.53 : 2.63 : 2.68 : 2.90 : 3.05 : 2.79 : 2.95. RL/WA (1-10): 1.54 : 1.06 : 1.46 : 1.78 : 2.17 : 1.76 : 1.83 : 1.87 : 1.89 : 2.15.

Maxillary palpus. Pale brown, ultimate palpomere with microgranulation and pale brown setae, triangular, axe-shaped.

Pronotum (Fig. 45). Glabrous, shiny, unicolour brown, wide, more transverse than semicircular. PL 0.96 mm; PW 2.11 mm. PI equal to 45.17. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles indistinct. Dorsal surface with distinct microgranulation, shiny with relatively dense punctuation, interspaces between punctures relatively wide.

Ventral side of body brown as colour as dorsal surface. Abdomen with sparse punctuation, ventrites 1 and 2 reddish-brown, ventrites 3-5 dark brown, ventrites 1-3 shiny, ventrites 4 and 5 with microgranulation, more matte.

Elytra. Oval, brown, glabrous, shiny, widest near middle. Side borders wide. EL 3.24 mm. EW 2.40 mm. EL/EW 1.35. Elytral striae with distinct rows of small-sized punctures. Elytral intervals with dense punctuation, punctures slightly smaller than those in striae.

Scutellum. Triangular, brown, as colour as elytron itself, glabrous, slightly shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs pale brown with pale brown setation. Tibia with distinct punctuation. Protarsomere and mesotarsomere 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.80 : 1.12 : 1.48 : 2.16 (protarsus), 1.00 : 0.65 : 0.63 : 0.95 : 1.51 (mesotarsus), and 1.00 : 0.40 : 0.42 : 0.68 (metatarsus).

Both anterior tarsal claws with 5 teeth.

Aedeagus (Figs 47, 48). Pale brown, slightly shiny. Basal piece rounded laterally and narrowing dorsally. Apical piece very slightly narrowing laterally and parallel dorsally, rounded apex. Ratio of length of apical piece to length of basal piece 1: 4.69.

Female. Dorsal surface without distinct differences, only space between eyes slightly wider than those in male.

Variation. Measurements: mean (minimum - maximum). Specimens (n=14). BL 4.42 mm (4.23-4.87 mm); HL 0.34 mm (0.23-0.42 mm); HW 1.08 mm (0.88-1.18 mm); OI 20.79 (14.52-24.18), PL 0.94 mm (0.87-1.04 mm); PW 2.02 mm (1.94-2.14 mm); PI 46.20 (44.85-48.60); EL 3.21 mm (3.13-3.41 mm); EW 2.38 mm (2.32-2.53 mm).

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela raii* sp. nov. is clearly different from similar species *Liodocistela majeri* sp. nov. and *Liodocistela tryznai* sp. nov. mainly by antennomere 3 as long as antennomere 2; while *L. majeri* and *L. tryznai* have antennomere 3 distinctly longer than antennomere 2.

Etymology. The new species is dedicated to one of the collectors - Ch. J. Rai.

Distribution. India (Darjeeling and Sikkim).

Liodocistela tryznai sp. nov. (Figs 49-55)

Type locality. North India, Uttaranchal state, Khairna Bridge near Nainital, 900-1000 m.

Type material. Holotype (♂): wl: N - INDIA, Uttaranchal state, / ca 13 km NW of Nainital, / KHAIRNA BRIDGE env., / 900-1000 m, 13.-17.vii.2003 / Z. Kejval & M. Trýzna lgt. [pb], (VNPC). The type is provided with a printed red label: Liodocistela tryznai sp. nov. / HOLOTYPUS / V. Novák det. 2014.

Description of holotype. Habitus as in Fig. 49, oval, convex, dorsal surface brown, shiny, glabrous, BL 4.35 mm. Widest near middle of elytral length; BL/EW 1.81.

Head (Fig. 50). Wide, short, with distinct microgranulation and sparse and shallow punctuation, punctures small, matte; anterior part and clypeus distinctly paler than basal part, clypeus with sparse pale brown setae. HW 1.05 mm; HW/PW 0.49. HL 0.28 mm (visible part). Eyes large, transverse, deeply excised, space between eyes narrow, slightly broader than length of antennomere 1; OI equal to 14.60.

Antenna (Fig. 51). Relatively short, with short setation. Antennomeres 1-3 pale brown, slightly shiny; antennomeres 4-9 slightly darker than antennomeres 1-3, matte with distinct punctuation and distinctly serrate. Antennomere 2 shortest, antennomere 3 slightly longer than antennomere 2. RLA (1-9): 1.48 : 0.70 : 1.00 : 1.67 : 1.67 : 1.96 : 2.00 : 2.22 : 2.11. RL/ WA (1-9): 1.91 : 1.46 : 1.80 : 1.50 : 1.36 : 1.66 : 1.71 : 1.82 : 1.84.

Maxillary palpus. Pale brown, ultimate palpomere with microgranulation and pale brown setae, triangular, axe-shaped.

Pronotum (Fig. 50). Glabrous, shiny, unicoloured brown, wide, more transverse than semicircular. PL 0.95 mm; PW 2.16 mm. PI equal to 43.94. Border lines complete, base bisinuate. Posterior corners almost rectangular, anterior margin rounded, anterior angles



Figs 49-53: *Liodocistela tryznai* sp. nov.: 49- Habitus of holotype; 50- head and pronotum of holotype; 51- antenna; 52- aedeagus, dorsal view; 53- aedeagus, lateral view.

indistinct. Dorsal surface shiny with relatively dense punctuation, interspaces between punctures distinctly wider than diameter of punctures.

Ventral side of body brown as colour as dorsal surface. Abdomen brown, ventrites with microgranulation, anterior part of ventrite 3 and ventrites 4, 5 distinctly darker than ventrites 1-3.

Elytra. Oval, brown, glabrous, shiny, widest near middle. Elytral suture distinctly darker. Side borders wide. EL 3.13 mm. EW 2.40 mm. EL/EW 1.30. Elytral striae with distinct rows of small-sized punctures. Elytral intervals with dense punctuation, punctures distinctly smaller than those in striae.

Scutellum. Triangular, brown, as colour as elytron itself, glabrous, shiny.

Elytral epipleura. Brown, glabrous, slightly shiny, widest near base, regularly narrowing to ventrite 1, then running parallel.

Legs brown with pale brown setation. Tibia with distinct punctuation and microgranulation slightly dilated anteriorly. Protarsomere and mesotarsomere 3 and 4 and metatarsomere 3 widened and lobed. RLT: 1.00 : 0.73 : 1.05 : 1.68 : 2.46 (protarsus), 1.00 : 0.66 : 0.61 : 0.86 : 1.36 (mesotarsus), and 1.00 : 0.42 : 0.39 : 0.75 (metatarsus).

Both anterior tarsal claws with 5 teeth.

Aedeagus (Figs 52, 53). Pale brown, slightly shiny. Basal piece rounded laterally and narrowing dorsally. Apical piece narrowing and slightly beak-shaped laterally and relatively wide and parallel with shortly triangular apex dorsally. Ratio of length of apical piece to length of basal piece 1: 6.10.

Female. Unknown.

Differential diagnosis. (For details see the key above and Table 1). *Liodocistela tryznai* sp. nov. is clearly different from similar species *Liodocistela raii* sp. nov. mainly by antennomere 3 distinctly longer than antennomere 2; while *L. raii* has antennomere 3 as long as antennomere 2. *L. tryznai* clearly differs from similar species *Liodocistela majeri* sp. nov. mainly by head with shallow punctures and elytra suture darker than elytron itself; while *L. majeri* has head with coarse punctures and elytral suture with same colour as elytron itself.

Etymology. The new species is dedicated to the collector - Miloš Trýzna (Děčín, Czech Republic), well-known specialist in Anthribidae.

Distribution. India (Uttaranchal state).

Liodocistela weigeli (Novák, 2007) comb. nov.

Cistelopsis (Liodocistela) weigeli Novák, 2007: 237.

Type locality. Nepal, prov. Karnali, Humla, 18 km NW Simikot, Chumsa Khola (Brücke), 30°02'25"N, 81° 39'06" E, 2950 m.

Type material. Paratype (♂): wl: Nepal, Dhawalgiri / Myagdi Distr., Kali / Gandaki-Khola // wl: Tatopani, 14. - 17. VI. / 1986, 1100 - 1400 m / leg. C. Holzschuh // yl: collection / Naturkunde- / museum Erfurt // rl: Cistelopsis (Liodocistela) / weigeli sp. n. / PARATYPUS / V. Novák det. 2006, (VNPC).

Other material examined. (1 spec.): wl: Kali-G. Khola / Tatopani / 1100-1400m / 14-17.VI.1986 [pb] // wl: W-Nepal / Dhawalagiri / C. Holzschuh [pb], (NMBS); (5 spec.): wl: Kali-G. Khola / Tatopani - Kopche- / pani 1100-1500m / 17.VI.1986 [pb] // wl: W-Nepal / Dhawalagiri / C. Holzschuh [pb], (NMBS, VNPC); (2 spec.): wl: Kali-G. Khola / Beni-Kusma / 1000-800m / 30.VI.-1.VII.86 [pb] // wl: W-Nepal / Dhawalagiri / Myagdi D. / C. Holzschuh [pb], (NMBS, VNPC); (7 spec.): wl: Myagdi Distr. / Tatopani / 1100-1400m / 27-28.VI.86 [pb] // wl: W-Nepal / Dhawalagiri / Myagdi D. / C.Holzschuh [pb], (NMBS, VNPC); (1 spec.): wl: Kali-G. Khola / Tatopani-Beni / 1100-1000m / 29.VI.1986 [pb] // wl: W-Nepal / Dhawalagiri / Myagdi D. / C.Holzschuh [pb], (NMBS); (1 spec.): wl: Arun R. - / Tumligtar / 26. V. 83 450m [pb] // wl: E. Nepal / Arun V. / M. Brancucci [pb], (NMBS); (1 spec.): wl: Arunthan 1300- / Tumlingtar 450m / 20.VI.1983 [pb] // wl: E. Nepal / Arun V. / M. Brancucci [pb], (VNPC); (2 spec.): wl: Ghar Khola / Shikha-Tatopani / 2000-1100m / 13.VI.1986 [pb] // wl: W Nepal / Dhawalagiri / Myagdi D. / C.Holzschuh [pb], (NMBS, VNPC); (1 spec.): wl: Thaklung- 11.VI. / Simraghad 1985 / 1500-500m [pb] // wl: E. Nepal / Koshi / M.Brancucci [pb], (NMBS); (1 spec.): wl: Kashi Distr. / Suikhet-Chandrakot / 1000-1600m / 8.VI.1986 [pb] // wl: W-Nepal / Gandaki / C. Holzschuh [pb], (NMBS); (1 spec.): Bhote-Koshi-K. / Tatopani- / Malaphu 700m / 30.VI.1987 [pb] // wl: C-Nepal / Bagamati / C. J. Rai [pb], (NMBS); (2 spec.): wl: Parbat Distr. / Karkineta-Nag- / danda 1600m / 3.VII.1986 [pb] // wl: W-Nepal / Dhawalagiri / C. Holzschuh [pb], (NMBS, VNPC); (1 spec.): wl: Parbat Distr. / Kusma-Karkineta / 900-1600m / 2.VII.1986 [pb] // wl: Nepal / Dhawalagiri / C.Holzschuh [pb], (NMBS); (1 spec.): wl: Kashi Distr. / Chandrakot-Hille / 1600-1000-1600m / 9.VI.1986 [pb] // wl: W-Nepal / Gandaki / C.Holzschuh [pb], (NMBS).

Remarks. The species was described by Novák (2007) as new from Nepal. BL from 4.06 to 5.04 mm. OI from 7.46 to 15.32 in males and from 19.18 to 28.51 in females. PI from 46.62 to 53.45 in males and from 44.34 to 48.54 in females. Figures of *Liodocistela weigeli* see Novák 2007: 237 (Fig. 6 - habitus of male holotype); 239: (Figs 7 - head and pronotum of male; 8 - head and pronotum of female; 9 - antenna (holotype); 10 and 11 - aedeagus dorsal and lateral view).

CHECK-LIST OF THE SPECIES OF THE GENUS LIODOCISTELA PIC, 1930

genus Liodocistela Pic, 1930: 28 type species Stilbocistela rufomarginata (Pic, 1930)

<i>Liodocistela bezdeki</i> sp. nov.	India (Maharasthra state)
Liodocistela bocaki sp. nov.	Indonesia (Sumatra isl.)
Liodocistela brancuccii sp. nov.	Nepal
Liodocistela instriata (Pic, 1930) comb. nov. (Cistelopsis)	eastern India
<i>Liodocistela kejvali</i> sp. nov.	India (Maharasthra state)
<i>Liodocistela lubosi</i> sp. nov.	southern India (Tamil Nadu state)
Liodocistela maculata sp. nov.	Laos, Thailand
<i>Liodocistela majeri</i> sp. nov.	India (Orissa state)
Liodocistela pacholatkoi sp. nov.	India (Kerala state)
Liodocistela raii sp. nov.	India (Darjeeling and Sikkin district)
Liodocistela tryznai sp. nov.	India (Uttaranchal state)
Liodocistela weigeli (Novák, 2007) comb. nov. (Cistelopsis)	Nepal

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