

On the Three Enigmatic Species of *Acmaeodera* Eschscholtz from India and Pakistan in the Collection of Forest Research Institute in Dehradun (Coleoptera, Buprestidae: Polycestinae)¹

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Abstract—The taxonomic position of three enigmatic buprestid species: *Acmaeodera kerremansi* Stebbing, *A. beesoni* Obenberger, and *A. gardneri* Obenberger described from the “Upper Punjab” is discussed. Examination of the high resolution images of the type specimens of these species deposited in the National Forest Insect Collection (Forest Research Institute, Dehradun, India) has proved that all of them belong to the subgenus *Lisposcelis* Volkovitsh. Lectotype is designated for *A. kerremansi*. The putative synonymy of some recently described Indian acmaeoderine taxa is discussed. A list of all the known species of the subgenus *Lisposcelis* is provided.

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For many years the taxonomic positions of *Acmaeodera kerremansi* Stebbing, 1914, *A. beesoni* Obenberger, 1928, and *A. gardneri* Obenberger, 1928 described from the “Upper Punjab” (now split between Pakistan and India) has remained uncertain. Modern authors usually assign the first species to the subgenus *Acmaeotethya* Volkovitsh, 1979, while the latest two, to the group “*Acmaeoderini incertae sedis*” (Volkovitsh, 1979; Kubáň et al., 2006, 2016) or, questionably, to the subgenus *Acmaeodera* s. str. (Bellamy, 2008). Recently Hołyński (2017)² attributed the species misidentified by him as *A. beesoni* (not Obenberger, 1928) (type species) and *A. kerremansi* (not Stebbing, 1914) to the newly established subgenus “*Distethya*,” leaving *A. gardneri* in an uncertain posi-

tion. In doing so he based solely on the contradictory original descriptions and did not attempt examination of the type specimens. At the same time, he described *A. (Lisposcelis) “mariae”* and *A. (“Distethya”) “leveyi”* which turned out to be very close and most probably identical to the species under consideration (see comments below).

Sudhir Singh has prepared high resolution images of the habitus, several details, and labels of the type specimens deposited in the National Forest Insect Collection (Dehradun, India), which made possible clarifying the taxonomic position of these mysterious species. To our great surprise, it turned out that they all possess the pectinate fore tibia, which testifies to their undoubted belonging to the subgenus *Lisposcelis* Volkovitsh, 1979. Amazingly, none of the authors that described these species or subsequent researchers noticed this peculiar and taxonomically most important character! On the other hand, the denticulation of the external margin of the fore tibia in *Lisposcelis* species can only be seen at a certain angle and can be easily overlooked in badly mounted specimens.

Unfortunately, it is impossible to conduct a taxonomic revision of subgenus *Lisposcelis* without examination of the type specimens; some species names most probably are the synonyms. For this reason, in

¹ This article was originally submitted by the authors in English and is first published here.

² New taxa were described and taxonomic changes made in a private pamphlet “Procrustomachia” self-published by R.B. Hołyński, which in our opinion do not meet publication criteria and are not compliant with the Code (Bílý and Volkovitsh, 2017). The application to recognize this pamphlet an unavailable work was recently submitted to the International Commission on the Zoological Nomenclature (Bílý et al., 2018). For this reason, until the ICZN makes its decision we treat all new names proposed in “Procrustomachia” as unavailable and put them in quotation marks (“”) in the present publication.

the present publication we provide only a species list with putative synonymy and comments.

MATERIALS AND METHODS

Photographs of the habitus and morphological structures were taken by Dr. S. Singh using Automontage System with Micropublisher Q-Imaging 5.0 RTV camera mounted on Olympus SZX-16 stereomicroscope.

Codens used in the text:

BMNH—The Natural History Museum, London, United Kingdom;

MNHN—Museum National d’Histoire Naturelle, Paris, France;

NFIC [= IFRI]—National Forest Insect Collection, Forest Research Institute, Dehradun, India;

NHMB—Naturhistorisches Museum, Basel, Switzerland;

NMPC—National Museum, Prague, Czech Republic;

RBHC—R.B. Hołyński collection, Milanówek, Poland (not studied);

ZIN—Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

Locality data of the specimens are cited verbatim. The double slash (/) is used for separating data on different labels; single slash (/), for separating different lines, and the square brackets, for clarification of or comments on the text of the labels; h—handwritten, p—printed. Abbreviation “U. P.” on the original labels means “United Provinces” (a historic administrative unit of British India in 1902–1950). Subsequently, it was renamed into Uttar Pradesh State and later the Himalayan portion got separated as Uttarakhand State. Localities Dehradun and Phanduwalla are situated in Uttarakhand while Saharanpur is in Uttar Pradesh.

TAXONOMY

Genus *Acmaeodera* Eschscholtz, 1829

Subgenus *Lisposcelis* Volkovitsh, 1979

Type species: *Acmaeodera jakobsoni* Obenberger, 1928 (by original designation).

Volkovitsh, 1979 : 344 (*Acmaeodera* subgen.); Bellamy, 1985 : 412; Poole and Gentili, 1996 : 62 (synonym of *Acmaeodera*; *lapsus calami*); Bellamy,

2003 : 17 (*Acmaeodera* subgen.); Kubáň et al., 2006 : 332; Bellamy, 2008 : 149; Volkovitsh and Niehuis, 2012 : 242 (in text); Kubáň et al., 2016 : 442; Hołyński, 2017 : 77 (comments), 85 (list).

Acmaeodera (Lisposcelis) kerremansi Stebbing, 1914 (Figs. 1–5, 21, 25)

Stebbing, 1914 : 195, pl. XV, fig. 1; Obenberger, 1926 : 84; Kubáň et al., 2006 : 331 (subgenus *Acmaeotethya*); Bellamy, 2008 : 210 (subgenus *Acmaeotethya*; *cisti* species-group); Kubáň et al., 2016 : 440 (subgenus *Acmaeotethya*); Faisal et al., 2013 : 740; Hołyński, 2017 : 85 (list), 87 (key) (not Stebbing, misidentification; subgenus “*Distethya*”).

Type specimens. Lectotype (designated here), sex unknown (NFIC), 6 labels (Fig. 5): “*Acmae. / Kerremansi* (h) / Type (p) / Steb. (round, with red margin) // *Acmaeodera / Kerremansi* Steb. (h) // 6156 (h) // 208 (h) // 318 (p) // Changa Manga Ption [Plantation] / Punjab / 17.V.05 [back side: 388-1905 Buprestidae / from Sissu in bark / *Acmaeodera* ? (h, pencil)].

Host plants. *Dalbergia sissoo* Roxb. (Fabaceae) (Stebbing, 1914).

Comments. According to the original description, there were several specimens of *A. kerremansi* cut from pupating chambers in dying sissu-trees at the Changa Manga Plantation (Punjab; currently Changa Manga, Punjab Prov., Pakistan) on 17 and 18 May 1905, although the measurements are given for a single specimen (Stebbing, 1914). For this reason, we designate a specimen deposited in NFIC as lectotype. The illustration of *A. kerremansi* in Stebbing (1914) corresponds to this specimen by pronotal and elytral markings but the fore tibiae are shown smooth, not pectinate. According to Stebbing’s description, marginal stripes on the sides of pronotum do not reach its anterior margin (this character is also used by Hołyński in the key to distinguish *A. kerremansi* from other species of his “*Distethya*”). Actually, in the lateral and front views of pronotum (Figs. 2, 21) marginal stripes reach anterior corners being very narrow in anterior 1/3 and invisible in the dorsal view (Figs. 1, 25). Among other diagnostic characters, the extensive orange zig-zag elytral markings, elytra widest in apical half, and strongly and uniformly punctate pronotum are mentioned in the description, although all these characters are rather variable in numerous specimens of *A. “kerremansi* var. *fasciatipennis*” (see below).



Figs. 1–10. *Acmaeodera (Lisposcelis)* spp., habitus, details, and labels: (1–5) *A. (L.) kerremansi* Stebbing, 1914, lectotype (NFIC) [(1) dorsal view; (2, 3) lateral view; (4) right fore tibia; (5) labels (black arrow shows back side of upper label)], (6–10) *A. (L.) “kerremansi var. fasciatipennis”* Théry (in coll.), “holotype” sensu Faisal et al., 2013 (NFIC) [(6) dorsal view; (7, 8) lateral view; (9) right fore tibia; (10) labels]. White arrows show subhumeral incision. Photo S. Singh.

Acmaeodera (Lisposcelis) gardneri Obenberger, 1928
(Figs. 11–15, 23, 27)

Obenberger, 1928 : 118; 1934 : 290; Volkovitsh, 1979 : 345 (*incertae sedis*); Kubáň et al., 2006 : 339 (*incertae sedis*); Bellamy, 2008 : 199 (subgenus *Acmaeodera* ?); Kubáň et al., 2016 : 440 (*incertae sedis*); Faisal et al., 2013 : 740; Hołyński, 2017 : 85 (list), 86 (key) (subgenus indet.).

Type specimen. Holotype (sex unknown, NFIC), 6 labels (Fig. 15): Dehra Dun, U. P. / J.C.M. Gardner. (p) / 22.V.(h) 192(p)4(h) // R.R.D. 182 / B.C.R. 92 / Cage 60 (p) // ex *Shorea / robusta*. (p) // 98 (h) // Typus (p, red) // *Acmaeodera / Gardneri / m.* Type (h) / Det. Dr. Obenberger (p).

Host plants. *Shorea robusta* Roth (Dipterocarpaceae).

Comments. Obenberger (1928, 1934) noted the inconspicuous subhumeral incision of the elytral margin which brings this species close to *A. beelsoni*. Actually, subhumeral incision, though poorly marked, is present in both species (Figs. 13, 18). Other key characters are as follows: pronotum widest at basal 1/3, elytral sides shortly converging to the apices, elytra predominantly dark with yellow longitudinal markings, intervals flat, with very dense punctures indistinguishable from striae punctures, striae inconspicuous in anterior part of elytra, body length 7 mm (after Obenberger, 1928, 1934). It is highly probable, that *A. gardneri* represents only a color variety of *A. kerremansi* with strongly reduced elytral markings; in this character it is very similar to dark specimens of *A. "kerremansi" var. fasciatipennis* (Fig. 6) and also to *A. "mariae"* (see below).

Acmaeodera (Lisposcelis) beelsoni Obenberger, 1928
(Figs. 16–20, 24, 28)

Obenberger, 1928 : 117; 1934 : 289; Volkovitsh, 1979 : 345 (*incertae sedis*); Kubáň et al., 2006 : 339 (*incertae sedis*); Bellamy, 2008 : 161 (subgenus *Acmaeodera* ?); Kubáň et al., 2016 : 440 (*incertae sedis*); Faisal et al., 2013 : 740; Hołyński, 2017 : 77 (not Obenberger, misidentification; as type species of subgenus "*Distethya*"), 85 (list), 87 (key).

Type specimen. Holotype (sex unknown, NFIC), 5 labels (Fig. 20): Pathri / Saharanpur, U. P. (p) / 28.V.(h) 19(p)19(h) / C.F.C. Beeson. (p) // R.R.D. 357 / B.C.R. 190 / Cage 126 (p) // 124 (h) // Typus (p, red) // *Acmaeodera / Beelsoni m.* / Type (h) / Det.

Dr. Obenberger (p). The original description also indicates the host plant: "ex *Butea frondosa*."

Host plant. *Butea monosperma* (Lam.) Taub. (= *B. frondosa* Roxb. ex Willd.) (Fabaceae) (Obenberger, 1928).

Comments. Obenberger (1928, 1934) emphasized the almost complete absence of subhumeral incision on the elytral margin like that in *A. gardneri*, which gave grounds for assuming the possible belonging of both species to the subgenus *Acmaeodera* s. str. (Bellamy, 2008). Among other key characters Obenberger noted small size (5 mm), pronotum widest at the middle with regularly arcuate sides, elytral sides subparallel in anterior half and long converging toward rather narrowly rounded apices in posterior half, longitudinal dark elytral markings concentrated in the sutural area. Additionally, striae punctures rather large, much larger than punctures on intervals; striae distinct in anterior part of elytra. Judging by the images, *A. beelsoni* is a distinct species quite different from *A. kerremansi* and *A. gardneri*; in elytral pattern it looks somewhat similar but not identical to *A. jakobsoni* Obenberger, 1928.

UNAVAILABLE NAMES

Subgenus "*Distethya*" Hołyński, 2017

"Type species:" *Acmaeodera beelsoni*: Hołyński, 2017 (not Obenberger, 1928; misidentification).

Hołyński, 2017 : 77 (description), 85 (list), 87 (key).

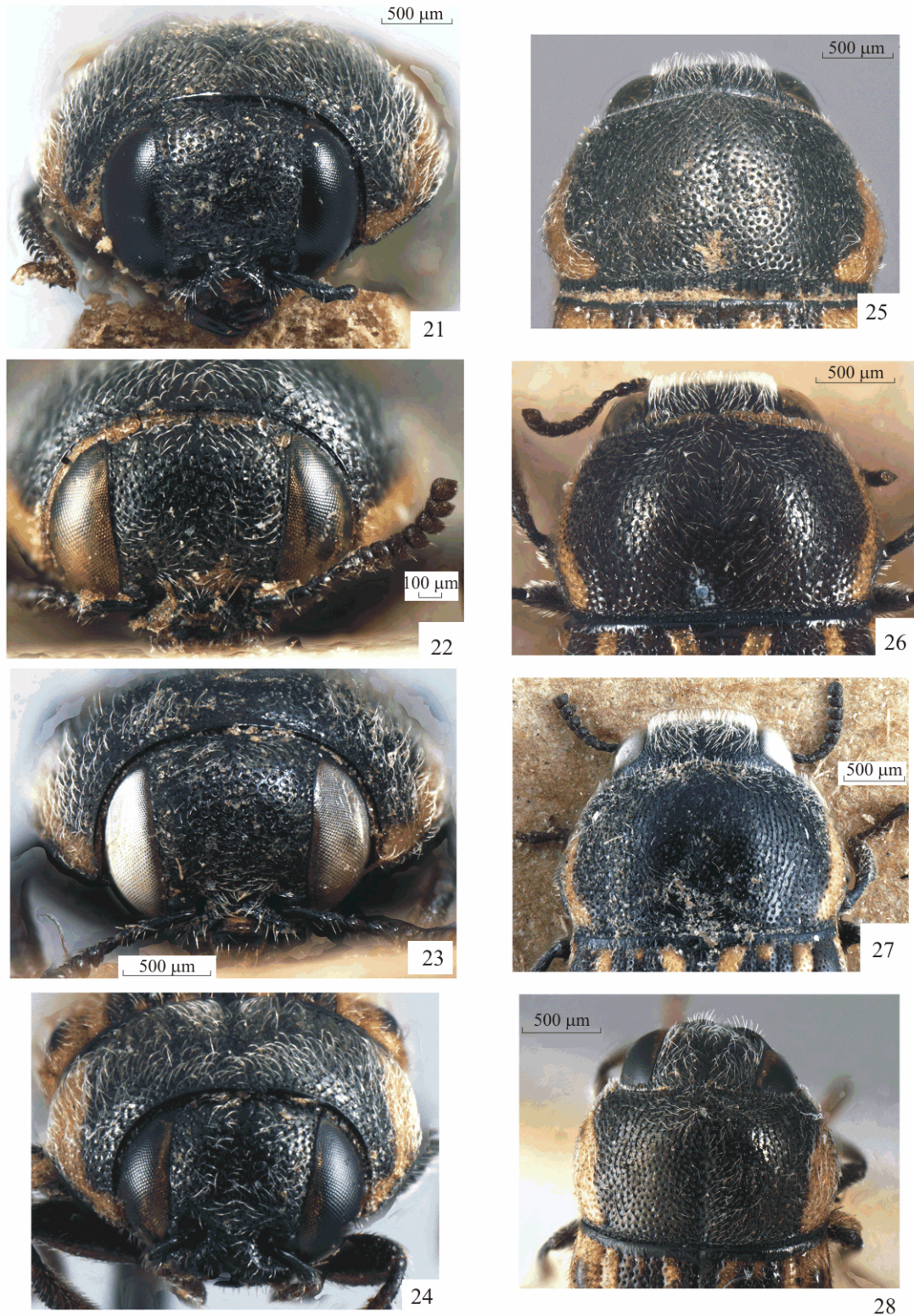
Acmaeodera (Lisposcelis) "kerremansi" var. fasciatipennis Théry (in coll.), nomen nudum
(Figs. 6–10, 22, 26)

Faisal et al., 2013 : 740, fig. 1 (as holotype; author: Stebbing); Bílý, 2018 : 93 (nomen nudum).

Material. 1 specimen, unsexed (NFIC), 6 labels (Fig. 10): Phanduwala / Dehra Dun, U. P. / F. Ent. (p) / 17.V.(h) 192(p)9(h) // ex *Mallotus / philippinensis* (p) // R.R.D. 891 / B.C.R. 271 / Cage 707 (p) // 222 (h) // *Acm. / Kerremansi / v. fasciatipennis* (h) / Type (p, red font) / A. Thery (h) // Type (p, red); 2 males, 6 females, and 1 unsexed specimen (NFIC), 6 labels: Asan R. / Dehra Dun. / M. Bose. (p) / [from] 3 [to] 8 (h).V.(h) 192(p)9(h) // R.R.D. 903 / B.C.R. 297 / Cage 100 (p) // S.E's. No. (p) 531 (h) // ex *Ougeinia dalbergioides*. (p) // [from] 224 [to] 228 [or] 231 [or] [from] 234 [to] 236(h) // *Acmaeodera* [or *Acm.*] (h) /



Figs. 11–20. *Acmaeodera (Lisposcelis)* spp., habitus, details, and labels: (11–15) *A. (L.) gardneri* Obenberger, 1928, holotype (NFIC) [(11) dorsal view; (12, 13) lateral view; (14) right fore tibia; (15) labels], (16–20) *A. (L.) beesoni* Obenberger, 1928, holotype (NFIC) [(16) dorsal view; (17, 18) lateral view; (19) right fore tibia; (20) labels]. White arrows show subhumeral incision. Photo S. Singh.



Figs. 21–28. *Acmaeodera (Lisposcelis)* spp., head and pronotum: (21, 25) *A. (L.) kerremansi* Stebbing, 1914, lectotype (NFIC); (22, 26) *A. (L.) "kerremansi var. fasciatipennis"* Théry (in coll.), "holotype" sensu Faisal et al., 2013 (NFIC); (23, 27) *A. (L.) gardneri* Obenberger, 1928, holotype (NFIC); (24, 28) *A. (L.) beasoni* Obenberger, 1928, holotype (NFIC). (21–24) head, front view; (25–28) pronotum, dorsal view. Photo S. Singh.

Kerremansi / v. *fasciatipennis* / Thery (h) / Thery det. (p).

Additional material. 1 female (MNHN), 7 labels: Asan R. / Dehra Dun. / M. Bose. (p) / 6.V.(h) 192(p)9(h) // S.E's. No. (p) 518 (h) // ex *Mallotus philippinensis*. (p) // 237 (h) // Comp. au / Type par Thery (p) // *Kerremansi* / Stebb. (h) / Thery det. (p) // Muséum Paris / 1935 / coll. A. Théry (p); 3 specimens, unsexed (MNHN): 7 labels: Asan R. / Dehra Dun. / M. Bose. (p) / 30.IV.(h) or 5.V.(h) 192(p)9(h) // R.R.D. 903 / B.C.R. 297 / Cage 100 (p) // S.E's. No. (p) 531 (h) // ex *Ougeinia dalbergioides*. (p) // 223[or] 229 [or] 230 (h) // *Kerremansi* / v. *fasciatipennis* A. Thery (h) / Paratype (p, red font) // Muséum Paris / 1935 / coll. A. Théry (p); 1 male (NHMB), 5 labels: Asan R. / Dehra Dun. / M. Bose. (p) / 5.V.(h) 192(p)9(h) // R.R.D. 903 / B.C.R. 299 / Cage 100 (p) // S.E's. No. (p) 531 (h) // ex *Ougeinia dalbergioides*. (p) // *Kerremansi* / v. *fasciatipennis* Thery (h) / Paratype (p, red font) / ♂ (h).

Host plants. *Mallotus philippinensis* (Lam.) Muell. Arg. (Euphorbiaceae) ("holotype" of *A. "kerremansi* var. *fasciatipennis*" from NFIC; specimen of *A. kerremansi* from MNHN); *Desmodium oojeinensis* (Roxb.) H. Ohashi (= *Ougeinia dalbergioides* Benth.) (Fabaceae) ("paratypes" of *A. "kerremansi* var. *fasciatipennis*" from MNHN and all specimens from NFIC).

Comments. By elytral pattern the darker specimens of this form (e. g., the "holotype" from NFIC) are very similar to the holotype of *A. gardneri* Obenb. (Figs. 6, 11), while the lighter specimens look similar to *A. kerremansi* (specimen identified by A. Théry in MNHN). Nearly all the specimens of this form originate from Dehradun which is the type locality of *A. gardneri* as well. Most likely, they are conspecific with the latter, and *A. gardneri*, in its turn, is conspecific with *A. kerremansi*, but direct examination of all the type specimens and additional material are needed.

Acmaeodera (Lisposcelis) "mariae"
Hołyński, 2017

Hołyński, 2017 : 76 (description), 85 (list), 86 (key), figs. 15, 17.

Material. "Holotype," unsexed (RBHC): "Dehra Dun, U. P.; J.C.M. Gardner; 4.V.1931" "ex Dry stems." "Cage 175;" "paratype," unsexed (RBHC): "Lachiwala; Dehra Dun, U. P.; F. Ent.; 8.VI.1930" "ex

Anogeissus latifolia." "R.R.D. 892; B.C.R. 280; Cage 242" (after Hołyński, 2017).

Host plants. *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill. et Perr. (Combretaceae).

Comments. Based on the habitus and elytral markings, *A. "mariae"* is most probably conspecific with *A. gardneri* Obenb. and possibly, with *A. kerremansi* (see comments to *A. "kerremansi* var. *fasciatipennis*"). "Holotype" of *A. "mariae"* was also cut by J.C.M. Gardner in Dehradun but the label data are different. By the design and content of the labels, both specimens of *A. "mariae"* in RBHC private collection undoubtedly originate from the Forest Research Institute.

Acmaeodera ("Distethya") "leveyi"
Hołyński, 2017

Hołyński, 2017 : 81 (description), 85 (list), 87 (key).

Material. "Holotype," ? female (BMNH): ["14.IV.1915 H. / In dry *Holoptelea / integrifolia* / stem / Pusa W.S. / b: no: 1198 (h) // 1978 [vertically] *Acmaeodera / leveyi* Hoł. / det. R. Hołyński (h) // *Acmaeodera / leveyi* / Hołyński 1978 / HOLOTYPE (h, red);" 5 "paratypes" (BMNH) with similar labels but dates 14, 15, 19, 23.IV.1915 (1 male with additional identification label: "*Acmaeodera cincticollis* Kerr. (h) / det. K. G. Blair (p)" [misidentification]; there is also a bottom label: "ssp. *leveyi* Hoł., India (h, Hołyński)." "This looks very like *A. kerremansi* Stebbing (h), B. Levey det., 19(p)83(h)"); 3 males, 1 female with similar labels in RBHC undoubtedly originate from the same series.

Host plants. *Holoptelea integrifolia* Planch. (Ulmaceae).

Comments. Examination of the "holotype" and "paratypes" of *A. "leveyi"* in BMNH has revealed that they possess pectinate fore tibia and thus also belong to the subgenus *Lisposcelis*. By the nearly simple punctate sculpture of pronotum with poorly marked lateral rugosities, pronotum widest at or near posterior third, and light elytral pattern, some specimens of *A. "leveyi"* resemble *A. kerremansi*; one specimen has dark elytral pattern rather similar to that in *A. gardneri*, but *A. "leveyi"* may be a distinct species as well.

LIST OF *ACMAEODERA* (*LISPOSCELIS*) SPECIESSubgenus *Lisposcelis* Volkovitsh, 1979

beesoni Obenberger, 1928. India: Uttar Pradesh (Saharanpur)

gardneri Obenberger, 1928. India: Uttarakhand (Dehradun)

jakobsoni Obenberger, 1928 (type species). "Himalaya occid."

= *eberti* Cobos, 1966. Nepal: Narayani zone: Chitwan (Meghauli)

kerremansi Stebbing, 1914. Pakistan: Punjab (Changa Manga)

zaitsevi Volkovitsh et Niehuis, 2012. Israel: Dead Sea Area

UNAVAILABLE NAMES

"*kerremansi* var. *fasciatipennis*" Théry (in coll.) (nomen nudum) (? = *gardneri*). India: Uttarakhand (Phanduwala, Dehradun).

"*leveyi*" Hołyński, 2017 (subgen. "*Distethya*"). India: Bihar (Pusa).

"*mariae*" Hołyński, 2017 (? = *gardneri*). India: Uttarakhand (Dehradun).

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