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Comparative description of last instar larva of *Cassida informis*  
BOHEMAN, 1862 and *Cassida varians* HERBST, 1799\*  
(Coleoptera: Chrysomelidae: Cassidinae)

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ABSTRACT. Last instar larvae of *Cassida informis* BOHEMAN, 1862 and *Cassida varians* HERBST, 1799 are described and figured in detail. Description of *C. informis* is given for the first time, of *C. varians* for the first time in such detailed form. Measurements of the body and chaetotaxy of the head, mouthpart, legs and dorsal and ventral side of the body are given for both species. Resemblances and differences of both species are discussed and comparative data to larvae of other Oriental *Cassida* are given.

Key words: entomology, morphology, larvae, Coleoptera, Chrysomelidae, Cassidinae, Cassidini, *Cassida informis*, *Cassida varians*, Oriental Region.

INTRODUCTION

Immatures of 119 species of the tribe Cassidini have been described till now (BOROWIEC and ŚWIĘTOJAŃSKA 2002). Most of them are descriptions of last instar larvae (first instar larvae were described in detail only for 13 species). Within the genus *Cassida* immatures of 63 species have been described so far (15% of world species), 15 of them from Oriental Region (ŚWIĘTOJAŃSKA 2005). Eight of these species occur in India, although descriptions of some larvae were based also on materials from other countries: *C. circumdata* HERBST, 1799 (YEUNG 1934 - as *Metriona circumdata*; JOHN GEORGE and VENKATARAMAN 1986; ZAITSEV 1988, 1992; KIMOTO and TAKIZAWA 1994, 1997), *C. conchylata* (SPAETH, 1914) (ZAITSEV 1988, 1992), *C. enervis* BOHEMAN, 1862 (SINGH

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\*Results of the Czech-Polish Expedition to India, Maharashtra, IX-X 2005, no.8.

et al. 1985), *C. exilis* BOHEMAN, 1854 (TAKIZAWA 1980 - as *Cassida* sp. 2), *C. obtusata* BOHEMAN, 1854 (GRESSITT 1952; GRESSITT and KIMOTO 1963; TAKIZAWA 1980; ZAITSEV 1988; KIMOTO and TAKIZAWA 1997), *C. rati* MAULIK, 1923 (ZAITSEV 1988, 1992; KIMOTO and TAKIZAWA 1997), *C. subtilis* WEISE, 1897 (TAKIZAWA 1980 - as *Cassida* sp. 1), and *C. varians* HERBST, 1799 (SANKARAN and KRISHNASWAMY 1974 - as *C. syratica*).

The first description of larva of *C. varians* is very superficial, with no diagnostic characters, and thus redescription is needed (SANKARAN and KRISHNASWAMY 1974). We have some doubts that authors of the description really studied the true *Cassida varians*. They recorded *Alternanthera philoxeroides* (Amaranthaceae) as a host plant of this species while recent field and laboratory studies showed *Leucas linifolia* (Lamiaceae) (GHATE et al. 2003). Our observation in field in Maharashtra confirmed *Leucas linifolia* as true host plant. For other comparative data see discussion below.

Larva of *Cassida informis* BOHEMAN, 1862 has never been described. The species by many years was treated as "nomen dubium" because of misspelling of its type locality. BOHEMAN (1862) cited "China (Hongkong)" as locus typicus but the junior author studied holotype preserved in Museum of Natural History, London and it possesses locality label "Bombay". BOROWIEC (2001) and GHATE et al. (2003) recorded *C. informis* from Maharashtra in India, and during our expedition to Maharashtra we have observed that it is a common species in the state. On the other hand, we examined a large material of the genus *Cassida* from India and never found this species in other states than Maharashtra, thus *C. informis* is probably endemic species to western India. According to GHATE et al. (2003) it feeds on *Pogostemon purpurascens* (Lamiaceae) and our observations in field confirmed the host plant data.

*Cassida informis* and *C. varians* are very similar species, difficult to identify using only dried specimens in collections but well distinguishable in field according to distinct host plants and different life colour. In field both species were observed in the same places, often in distance not longer than few meters. They usually feed in a number on a single plant, on both dorsal and ventral side of leaves.

#### MATERIAL AND METHODS

##### MATERIAL

*Cassida informis*: India, Maharashtra prov., Lonavla, J. Świętojańska, L. Borowiec leg., 24, 25 IX 2005, 8 larvae of fifth instar. Larvae were found on *Pogostemon purpurascens*.

*Cassida varians*: India, Maharashtra prov., Lonavla, J. Świętojańska, L. Borowiec leg., 26 IX 2005, 15 larvae of fifth instar. Larvae were found on *Leucas linifolia*.

##### METHODS

Larvae were killed and preserved in 75 to 80 % ethanol. Removed from ethanol larvae were boiled in 10% KOH solution, cleared in distilled water and then mounted on slides with Swan's liquid (aqua distillata 20 g., arabic gum 15 g., chlorhydrate 60 g., glucose 3 g., acetic acid glacial 2 g.) and glycerine. Heads of the larvae were separated from the rest of the body and then the mouthparts dissected.

The photos were made using Nikon COOLPIX MDC Lens camera and Nikon SMZ-10A stereomicroscope.

Slides of larvae and measurements of their body length and width were made using Nikon SMZ 1500 stereomicroscope. Figures and examination - using Nikon ECLIPSE 80i microscope with phase contrast.

The description of the last instar based on the standard description of larva of the tribe Cassidini proposed in paper of senior author on *Aethiopocassis rhodesiana* (SPAETH, 1924) (ŚWIĘTOJAŃSKA, 2004) and with references to description of Oriental species *Cassida uniorbis* (CHEN et ZIA, 1961) (ŚWIĘTOJAŃSKA 2005).

Studied materials have been deposited at Department of Biodiversity and Evolutionary Taxonomy, Zoological Institute, University of Wrocław, Poland.

#### COMPARATIVE DIAGNOSIS OF BOTH SPECIES

On average *C. informis* is slightly longer and wider than *C. varians* (see Table 1): *C. informis* (n = 8) - length: 4.60 mm, width: 2.17 mm, while *C. varians* (n = 15) - length: 4.46 mm, width: 1.87 mm.

Living larvae of both species are pale yellow but in *C. informis* tops of all spiracles are yellowish-brown, whereas in *C. varians* only tops of pronotal spiracles are yellowish-brown (Figs 1, 2). Moreover, supra-anal processes and tops of lateral scoli (especially thoracic) of *C. informis* are slightly darker than of *C. varians* (this difference is much better visible in prepared specimens – on slides).

Lateral scoli of *C. informis* are slightly shorter than body width and more equal in length. Scoli of *C. varians* are as long as body width or slightly longer (Figs 1, 2, 9-12). Distal parts of lateral scoli without lateral projection of *C. varians* are distinctly longer and covered by more numerous spines than those of *C. informis* (Figs 3, 5, 6, 8). Supra-anal processes of *C. varians* are also longer than of *C. informis*. Bent dorso-laterally supra-anal processes of *C. varians* reach to the posterior border of second abdominal tergite, whereas those of *C. informis* to posterior border of third tergite. Elongate cauliflower-shaped sensilla of *C. varians* are placed dorsally along body axis and in the middle of abdominal sternites are distinctly longer than of *C. informis* (Figs 13-20).

Chaetotaxy of head of both species the same. Setae of *C. varians* in relation to the head size are longer than in *C. informis* whereas length of second antennal segment in relation to head size is longer in *C. informis* than in *C. varians*. (Figs 21, 22, 30, 31).

Setae of emargination of anterior border of *C. varians* are distinctly slimmer than of *C. informis* and reach slightly behind anterior margin of labrum whereas of *C. informis* reach anterior margin (Figs 23, 24, 32, 33).

Coxa of both species on internal side with setae arranged in three groups, but in *C. informis* first group is with one very long and 3 shorter setae whereas *C. varians* has one very long and 4 shorter setae (Figs 39, 40).

The larvae and adults feed on plants belonging to Lamiaceae, but *C. informis* was found on *Pogostemon purpurascens* whereas *C. varians* on *Leucas linifolia*.

Comparative data with other Oriental species are summarised in Table 1. Because previous descriptions are of various standards, in some species they lack important characters.

Table 1. Comparative characters of larvae of some Oriental *Cassida* species

Species/Characters	shield of supra-anal processes composed of:	anterior margin of labrum	mandibulae	length of body in mm / width of body in mm	general external appearance; ratio: length of scoli to width of body
<i>Cassida circumdata</i>	exuvia + faeces (ZAITSEV 1988) or exuvia + faeces attached in small masses to the tips of the supra anal processes (GRESSITT 1952)	shallowly emarginate (6 setae), on each side ventrally 4 setae (ZAITSEV 1988)	no information	4.810 ± 0.558 / 2.522 ± 0.371 (JOHN GEORGE and VENKATARAMAN 1986) or 3.14-5.12 (av. 4.56) / 1.63-3.07 (av. 2.55) (excluding spines) (YEUNG 1934)	scoli shorter than ½ body width except scoli 1 <sup>st</sup> and 16 <sup>th</sup> which are the longest and distinctly longer than 1/2body width
<i>Cassida conchylata</i>	exuvia + faeces = shield triangular in shape not solid with oval holes in the middle (ZAITSEV 1988)	without emargination (10 setae), on each side ventrally 3 setae (ZAITSEV 1988)	no information	no information	scoli longer than ½ body width with the longest 15 <sup>th</sup> and 16 <sup>th</sup> scoli
<i>Cassida enervis</i> (?)	exuvia + faeces (SINGH et al. 1985, SANKARAN and KRISHNASWAMY 1974)	no information	no information (Singh et al. 1985) 6-dentate (SANKARAN and KRISHNASWAMY 1974)	4.63 ± 0.05 mm / 2.30 ± 0.04 mm (Singh et al. 1985) 4.92 mm (range 4.80-5.30 mm) / 2.30 mm (range 2.11-2.48 mm) (SANKARAN and KRISHNASWAMY 1974)	scoli longer than ½ body width with the longest 15 <sup>th</sup> and 16 <sup>th</sup> scoli (SINGH et al. 1985) scoli shorter than ½ body width except scoli 15 <sup>th</sup> and 16 <sup>th</sup> (SANKARAN and KRISHNASWAMY 1974)
<i>Cassida exilis</i>	exuvia + faeces (TAKIZAWA 1980)	emarginate (TAKIZAWA 1980)	(?) 5-dentate in description but on drawings they look like typical Cassidini mandibulae with 6 <sup>th</sup> tooth moved back (TAKIZAWA 1980)	about 6.0 / 2.5 (TAKIZAWA 1980)	scoli longer than ½ body width with the longest 15 <sup>th</sup> and 16 <sup>th</sup> scoli
<i>Cassida obtusata</i>	exuvia + faeces attached in small masses to each previous exuvia (TAKIZAWA 1980; ZAITSEV 1988)	emarginate (8 setae?) on each side ventrally 3 setae (ZAITSEV 1988)	6-dentate (TAKIZAWA 1980)	about 5.5 / 2.5 (TAKIZAWA 1980)	scoli more or less similar in length approximately ½ body width
<i>Cassida rati</i>	exuvia + faeces = create thick triangular structure (ZAITSEV 1988)	emarginate (6 setae), on each side ventrally with 4 setae (ZAITSEV 1988)	no information	no information	scoli longer than ½ body width with the longest 15 <sup>th</sup> and 16 <sup>th</sup> scoli
<i>Cassida subtilis</i>	exuvia + faeces (TAKIZAWA 1980)	emarginate (TAKIZAWA 1980)	6-dentate (TAKIZAWA 1980)	about 6.0 / 2.5 (TAKIZAWA 1980)	scoli longer than ½ body width with the longest 15 <sup>th</sup> and 16 <sup>th</sup> scoli
<i>Cassida uniorbis</i>	exuvia + faeces = create thick triangular structure (ŚWIĘTOJAŃSKA 2005)	emarginate (6 long, thick setae reaching to anterior margin of labrum), on each side ventrally 3 setae (ŚWIĘTOJAŃSKA 2005)	6-dentate (6 <sup>th</sup> tooth distinctly moved back) with distinct tubercle at molar part (ŚWIĘTOJAŃSKA 2005)	5.1, 5.9 / 2.0, 2.3 (n=2) without scoli and supra-anal processes (ŚWIĘTOJAŃSKA 2005)	scoli more or less similar in length approximately ½ body width or slightly shorter (ŚWIĘTOJAŃSKA 2005)
<i>Cassida infomis</i>	exuvia + faeces = create thick triangular structure	emarginate (6 long, thin setae reaching to anterior margin of labrum), on each side ventrally 3 setae	6-dentate (6 <sup>th</sup> tooth distinctly moved back)	average 4.60 mm / 2.17 mm (n=8) without scoli and supra-anal processes	scoli more or less similar in length slightly shorter than ½ body width
<i>Cassida varians</i>	exuvia + faeces = create thick triangular structure	emarginate (6 long, thin setae reaching slightly behind anterior margin of labrum), on each side ventrally 3 setae	6-dentate (6 <sup>th</sup> tooth distinctly moved back)	average 4.46 mm / 1.87 mm (n=15) without scoli and supra-anal processes	scoli as long as body width or slightly longer

GENERAL DESCRIPTION OF LAST INSTAR LARVA OF *CASSIDA INFORMIS* AND *C. VARIANS*

Measurements: see table 2.

	<i>Cassida varians</i>		<i>Cassida informis</i>	
	length of body [mm]	width of body [mm]	length of body [mm]	width of body [mm]
1.	5.00	2.00	4.70	2.10
2.	4.75	1.85	4.20	2.20
3.	4.75	1.90	4.50	2.00
4.	4.25	1.80	4.75	2.05
5.	4.5	1.85	4.00	1.95
6.	4.35	1.95	5.85	2.45
7.	4.9	1.95	4.55	2.35
8.	4.25	1.85	4.55	2.25
9.	4.35	1.90	5.05	2.55
10.	4.25	1.90	5.15	2.40
11.	4.10	1.60	4.70	2.25
12.	4.35	1.95	4.85	2.10
13.	4.50	2.00	4.60	2.55
14.	4.40	1.85		
15.	4.25	1.80		

Body pale yellow with brown median longitudinal patch extending from mesothorax to abdominal segments, flattened dorso-ventrally, oval, widest across meso- and metanotum, slightly narrowed posteriorly (Figs 1, 2, 9-12).

Sixteen pairs of long lateral scoli and a pair of supra-anal processes (Figs 1-12). First two lateral scoli placed close to each other, directed anteriorly, next five gradually directed to antero-lateral side, 8th lateral scoli almost perfectly perpendicular to the body axis. Lateral processes 9th to 16th gradually directed posteriorly, 16th pair almost parallel to the body axis. Lateral branches of scoli numerous and quite short, shortening from base to the top of scoli. Each scolus and lateral branch armed apically with one seta. Supra-anal processes bent dorsally. Apices of supra-anal processes with one seta; the second seta placed below the top (Figs 4, 7).

Nine pairs of spiracles. Spiracles of thorax most prominent. Size of spiracles of 1-7 abdominal sternites very slightly decreasing posterad. Spiracles on eighth abdominal segment hardly visible, not elevated, slightly depressed, best visible in prepared specimens – on slides. Close to each spiracle one minute seta and one or two small cauliflower-shaped sensilla.

Dorsal and ventral side of the body with numerous setae and elongated cauliflower-shaped sensilla (Figs 9-20). Tergite and sternite of thorax close to anterior border

with two pairs of minute setae. Medially close to anterior border of each abdominal tergite and sternite a pair of minute setae. At base of each leg 2 or 3 minute setae. Tergite with elongate cauliflower-shaped sensilla placed on more or less prominent tubercles. Sensilla in the middle part of tergite on distinctly more prominent tubercles than tubercles of sensilla placed laterally. Sternite mostly with setae, only in posterior part of abdomen occurs small cauliflower-shaped sensilla on low tubercles (from 4<sup>th</sup> or 5<sup>th</sup> to 8<sup>th</sup> abdominal sternite). Setae on ventral side of thorax without tubercles. Setae and sensilla of abdominal sternites on low or prominent (middle of sternites 2-5 or 2-6) tubercles.

Pronotum with cauliflower-shaped sensilla arranged in two circles (each with 13-18 sensilla, most often 15, 16) and with one or two sensilla in the middle of each circle (Figs 9, 10). Pronotal sensilla placed in the middle of dorsal side more prominent, on distinctly higher tubercles than sensilla placed laterally (Figs 13, 14). Meso- and metanotum in the middle anteriorly with two sensilla on prominent tubercles (Figs 15, 16), one or two campaniform sensilla and with two to three small sensilla on low tubercles placed antero-laterally; postero-medially 2 sensilla on prominent tubercles and on each side posteriorly a group of 5-8 small sensilla on low tubercles. Abdominal tergite with two rows of sensilla: anterior with 6-10 sensilla and posterior with 4 sensilla. Two setae placed in the middle of each row distinctly larger than remainder (Figs 17, 18), especially in anterior abdominal tergite (they tend to decrease their size posteriorly). Chaetotaxy of dorsal side of body as in Figures 9, 10.

Ventral side of pro-, meso- and metanotum in the middle with 2-6 setae anteriorly and one pair posteriorly (Figs 11, 12). Setae in the middle of first three abdominal segments most numerous and longest, number and size of setae decreasing posteriorly. Setae in the middle of 2 to 5 or 6 abdominal sternites on prominent tubercles (19, 20). Chaetotaxy of ventral side of body as in Figures 11, 12.

Head hypognathous, retracted into pronotum, hardly visible from above, oval and well sclerotized (Figs 21, 22, 30, 31). Median suture complete, connected with fronto-clypeal suture. Clypeus distinct, wider than long, with a pair of setae and a pair of campaniform sensilla.

Ocelli black, five on each side of the head, arranged in constant pattern: four in one row, three of them placed very close, and one at a distance, fifth placed in a gap between group of three and one.

Frontal side of head with four small, vertical setae (V 1-4) and five frontal rows of setae: row Fa with three setae, Fb with four setae, Fc with three setae, Fd with single seta, Fe with two setae. In area between rows Fb and Fe 3-5 campaniform sensilla (Figs 21, 30). Temporal side of head with three setae (T 1-3) and two or three campaniform sensilla (Figs 22, 31).

Antennae 2-segmented, set in membranous ring. First segment stout wider than long with two campaniform sensilla and one short seta. Second segment elongate distinctly longer than width at the apex with three small peg-like sensilla and one prominent (sensory appendix).

Labrum wider than long, with distinctly emarginate anterior margin. Mid part of ventral (epipharyngeal area) surface with a pair of small setae, four campaniform

sensilla and two irregular groups of a few sensilla (Figs 24, 33). Central and lateral parts of ventral side of labrum armed with numerous small spines. Emargination with six long setae, and anterior margin on each side with three setae: two placed very close and one at a distance. On the dorsal surface of margin, close to the gap between the group of two and one seta, there is a single seta. Dorsal side of labrum with four setae, and with two pairs of campaniform sensilla (Fig. 23, 32).

Mandibles heavily sclerotized, 6-dentate, teeth blunt at apex, teeth 2-5 with crenulate anterior margin (Figs 25, 26, 34, 35). Sixth tooth distinctly moved back. At base of dorsal side of the mandible two setae and three campaniform sensilla: two placed close to setae and one close to anterior margin of mandible.

Maxillae and labium connate (Figs 29, 38). Maxillary palp two-segmented, palpiger distinct. Stipes with two long pointed setae. Palpiger ventrally with two setae and three campaniform sensilla; dorso-laterally with a group of short spines which look like spines on ligula and with a group of 6-11 strong and quite long spines, two times longer than the first one (Figs 27, 28, 36, 37). First segment of maxillary palpi with two setae and one campaniform sensillum. Second segment of palpi with a group of sensilla at apex, and below the apex with one campaniform sensillum, one digitiform sensillum and one seta. Galea fused with lacinia into mala. Mala bear six pointed setae, one seta blunt at the apex, one campaniform sensillum and one peg-like sensillum. Labial palp one-segmented, with group of sensilla at apex and one campaniform sensillum below apex. Ligula divided, covered with spines, and with six campaniform sensilla at base. Praementum with two long setae, two short setae and four campaniform sensilla. Postmentum with two long setae and two short setae.

Legs stout. (Fig. 39, 40). Tibiotarsus apically with heavily sclerotized, curved, single and simple claw armed basally with a pointed seta. Claw surrounded by a complex of 6 setae which are quite long and straight (five placed close to the claw and one at a distance). Tibiotarsus above claw with two campaniform sensilla and one small seta, and with 4 long setae. Femur usually with 13 or 14 long setae and one short seta; basally on internal side with a group of five campaniform sensilla and one short, pointed seta, and one campaniform sensillum at a distance. Basally, but on external side of femur, two campaniform sensilla. Coxa on internal side with setae arranged in three groups: first with one very long and 3 or 4 shorter setae, second group with three short setae, and basal group with two short setae.

The larva carries a shield on the supra-anal processes. Thick and triangular in shape, the shield is composed of the previous larval skins along with faecal matter.

#### DISCUSSION

SANKARAN AND KRISHNASWAMY (1974) described last instar larvae of *C. varians* from *Alternanthera philoxeroides* (Amarantaceae) and characterized body colour as creamy-white along the margin, with a reddish to dark brown median longitudinal patch extending from the mesothorax to the abdominal segments, on the pronotum a suggestion of two chitinised plates of brownish-grey and the supra-anal processes blackish-

brown. The larvae of *C. varians* we collected fed on *Leucas linifolia* (Lamiaceae) and their bodies were pale yellow without pronotal patches or brownish-grey plates, also supra-anal processes were pale yellowish-brown not blackish-brown. Other characters described by SANKARAN and KRISHNASWAMY (1974) are mostly not diagnostic and we have doubts in they really described larva of *C. varians*. Because several species associated with Amaranthaceae plants occur in India (e.g. *Cassida obtusata* BOHEMAN, 1854 and *Cassida exilis* BOHEMAN, 1854 which are very similar to pale form of *Cassida varians*), in great probability SANKARAN and KRISHNASWAMY (1974) described under name *Cassida syratica* (= *C. varians*) another species of *C. varians* group.

Our doubts are supported by analysis of description of larva of the second species in the paper of SANKARAN and KRISHNASWAMY (1974) named *Cassida enervis* BOHEMAN, 1862. *Alternanthera philoxeroides* has been showed by the authors as a host plant of this species. On the other hand SINGH et al. (1985) recorded *Celosia argentea* as a host plant of *C. enervis* and it is not astonishing because both belong to Amaranthaceae. But SANKARAN and KRISHNASWAMY (1974) described the body of the last instar larva of *C. enervis* as creamy-white along the margin, with reddish to dark brown median longitudinal patch extending from mesothorax to abdominal segments with average length of body 4.92 mm (range 4.80 to 5.30 mm; n=8) and width 2.30 mm (range 2.11 to 2.48 mm; n=8) whereas SINGH et al. (1985) described the fifth instar larva as greenish in colour and measuring  $4.63 \pm 0.05$  mm x  $2.30 \pm 0.04$  mm. Moreover, drawings



1, 2. Fifth instar larva: 1 - *Cassida informis*; 2 - *Cassida varians*



enclosed with descriptions show different type of larvae: in the paper of SANKARAN and KRISHNASWAMY the larva possesses lateral scoli shorter than the body width contrary to the drawing from the SINGH et al. paper where lateral scoli are longer or as long as the body width. SINGH et al. (1985) cited paper of SANKARAN and KRISHNASWAMY (1974) but with no discussion although both descriptions suggested that authors described larvae of two different species. On the other hand *Cassida enervis* has never been redescribed and its available descriptions are very poor in diagnostic data and we have doubts if in both papers of Indian authors the studied species was properly identified.

Our detailed descriptions of last instar larvae of *Cassida informis* and *Cassida varians* showed that in very similar and closely related species larvae are diagnostic if the description was properly prepared using well mounted microscope slides. Most of larvae descriptions prepared till now need to be redone because of their scanty and careless form. Proper identification of beetles based on adults reared from larvae is also very important.

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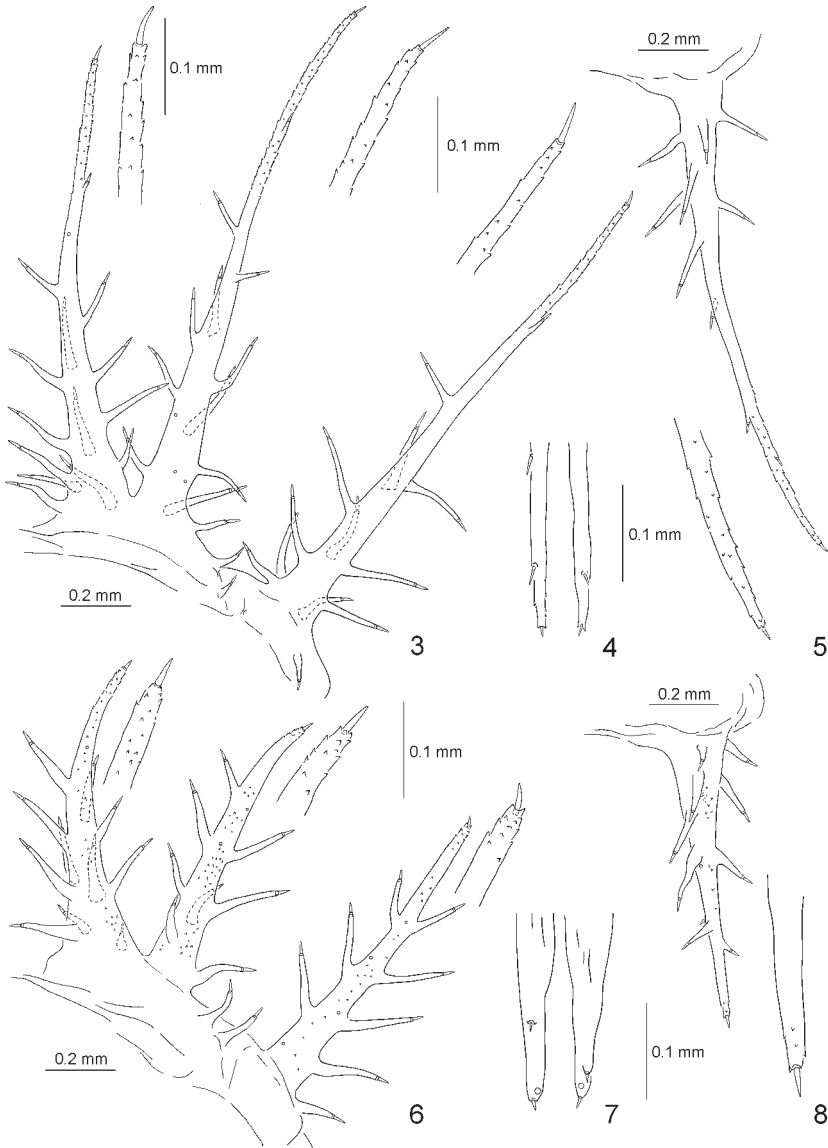
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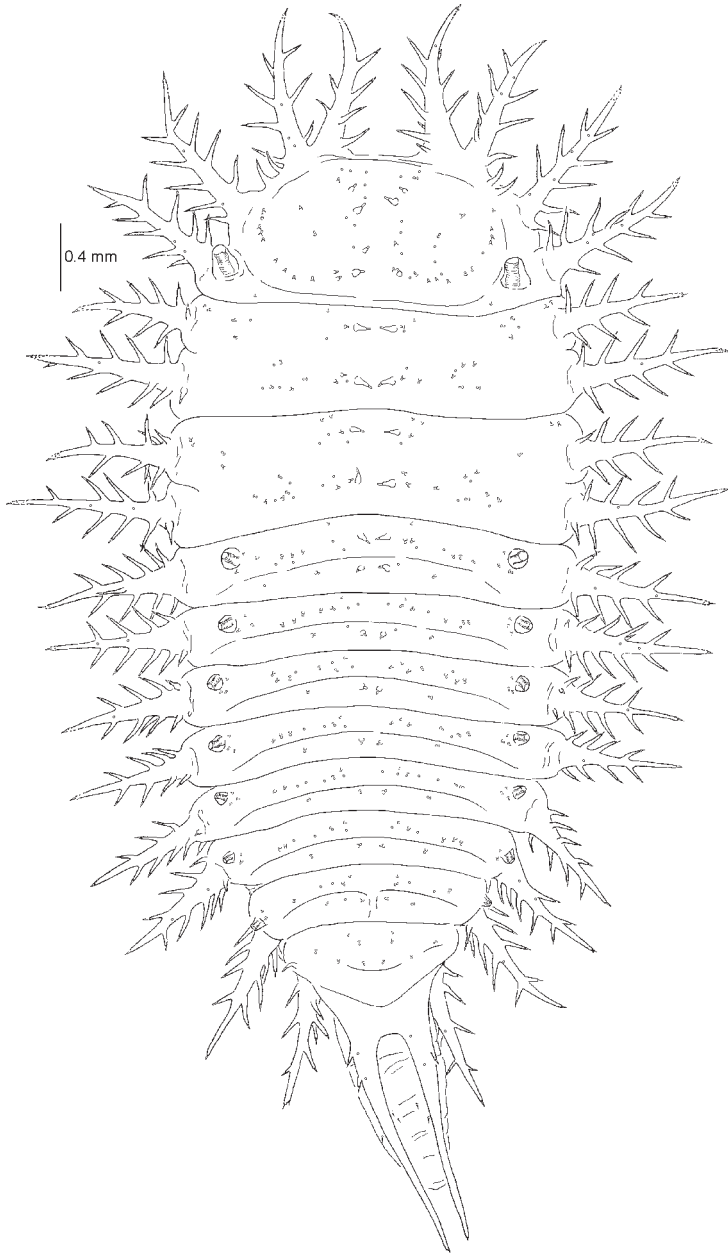
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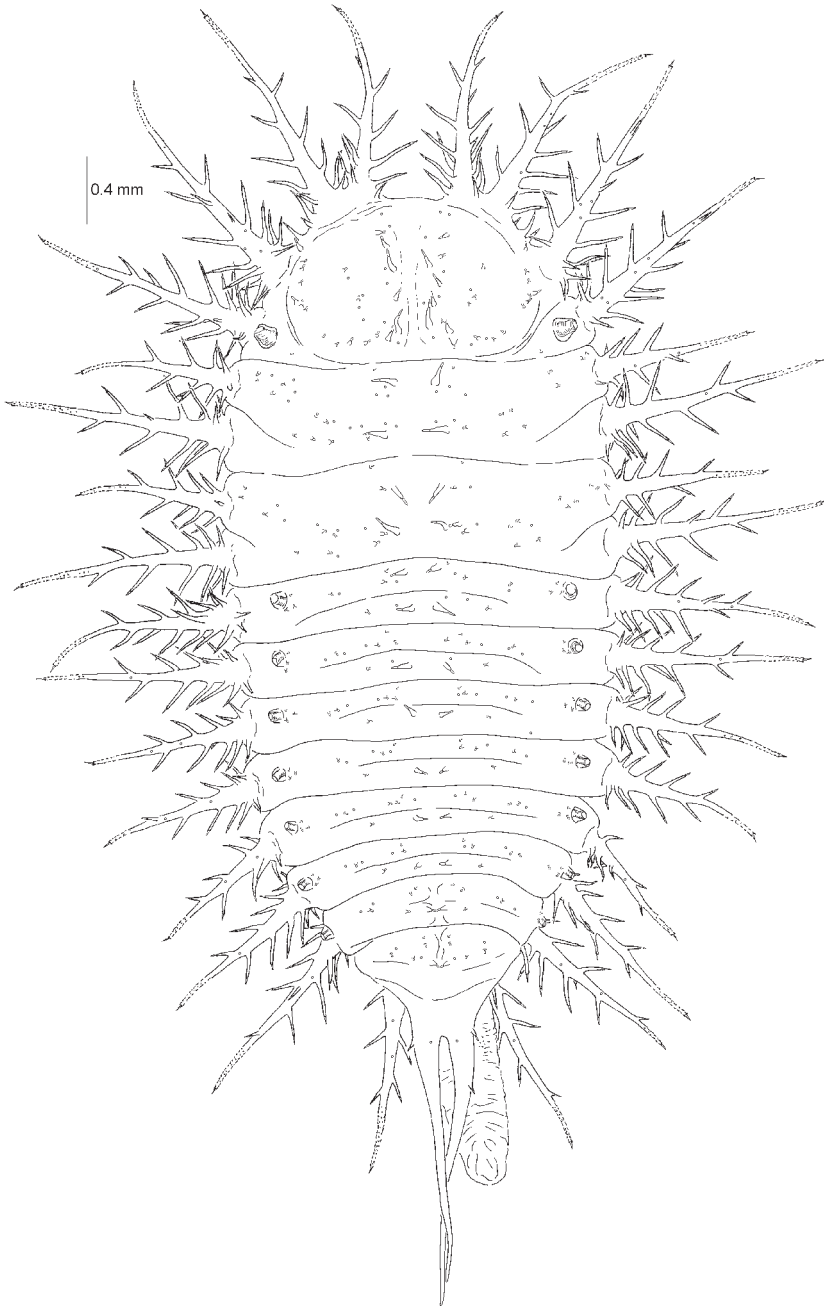
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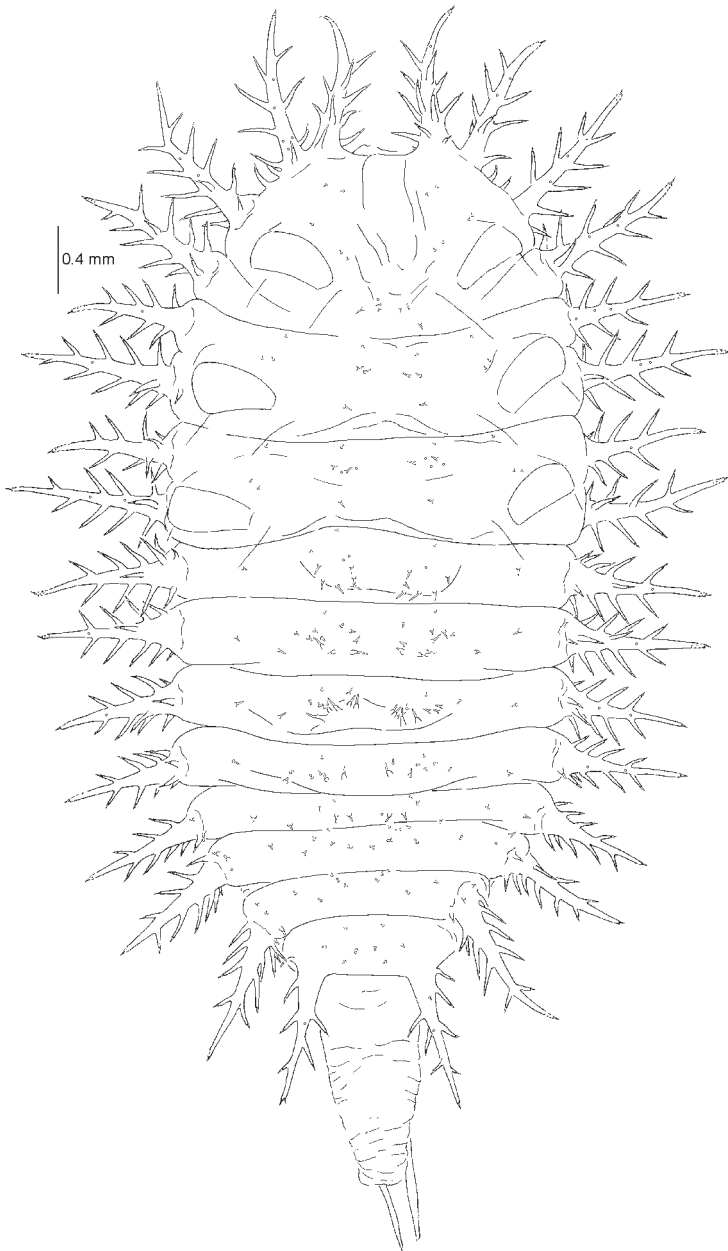
3-5. *Cassida informis*; 6-8. *Cassida varians*: 3, 6 - first three lateral scoli and their tops; 4, 7 - tops of supra-anal processes; 5, 8 - 16<sup>th</sup> lateral scolus and its top



9. *Cassida informis*, chaetotaxy of dorsal side of body



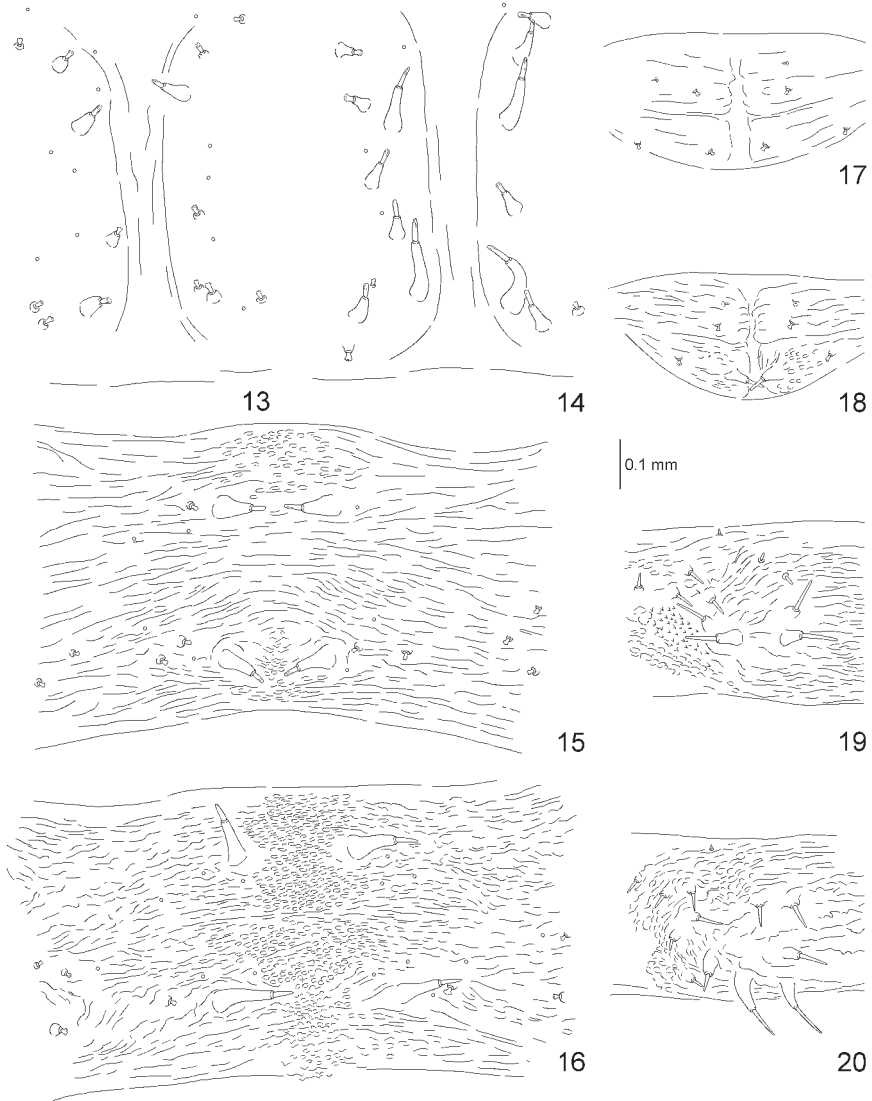
10. *Cassida varians*, chaetotaxy of dorsal side of body



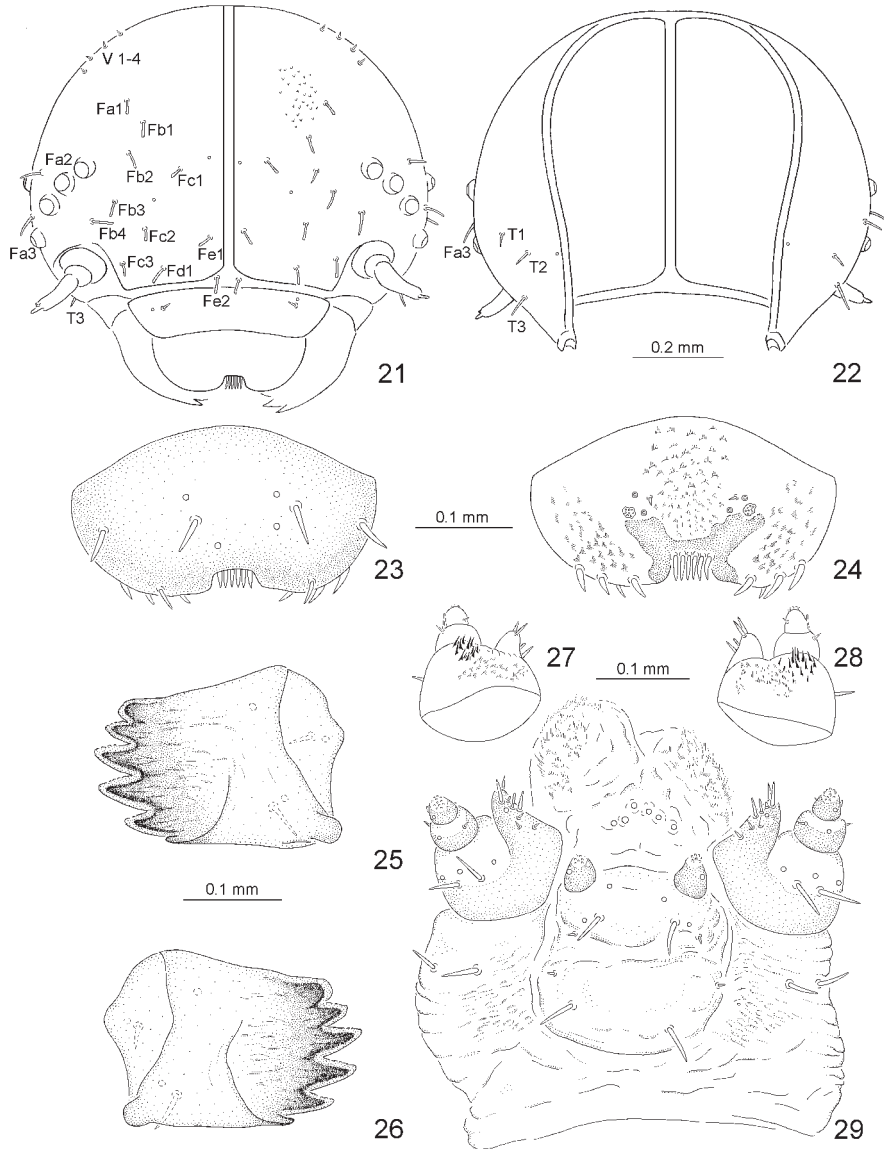
11. *Cassida informis*, chaetotaxy of ventral side of body



12. *Cassida varians*, chaetotaxy of ventral side of body

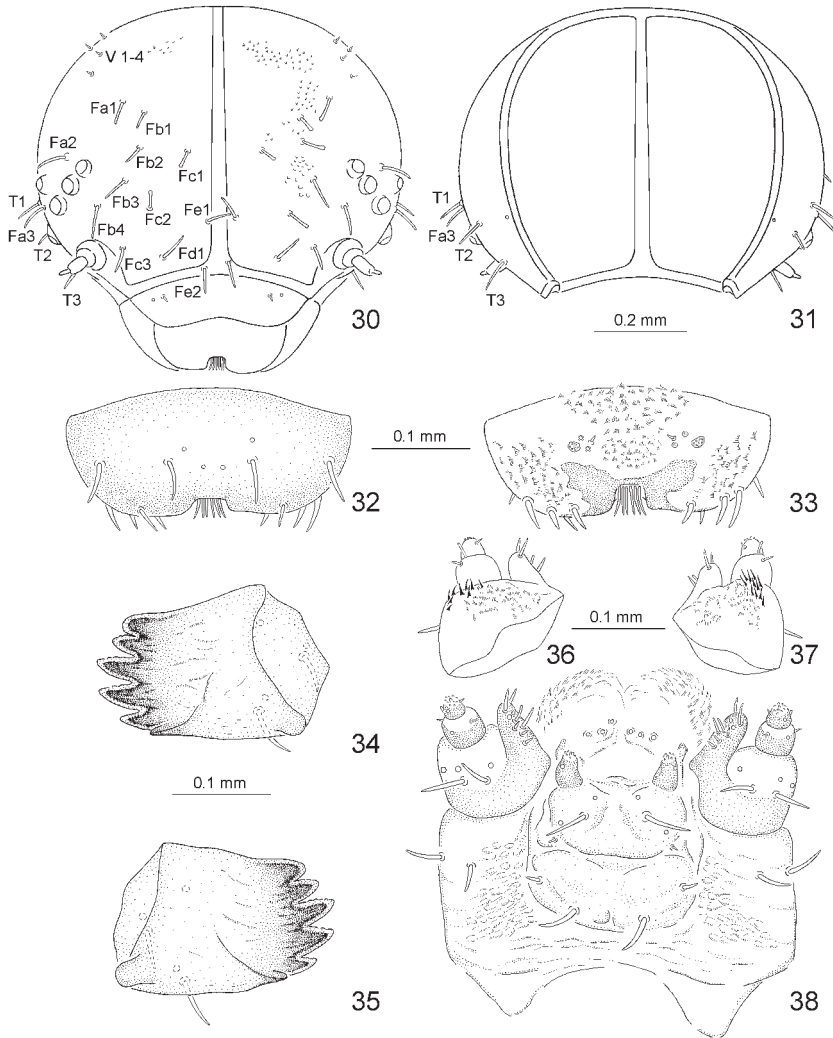


13, 15, 17, 19. *Cassida informis*; 14, 16, 18, 20. *Cassida varians*: 13, 14 - sensilla on dorsal side in the middle of pronotum; 15, 16 - sensilla on dorsal side in the middle of mesonotum; 17, 18 - sensilla in the middle of 8<sup>th</sup> abdominal segment dorsally; 19, 20 - sensilla in the middle of second abdominal segment ventrally

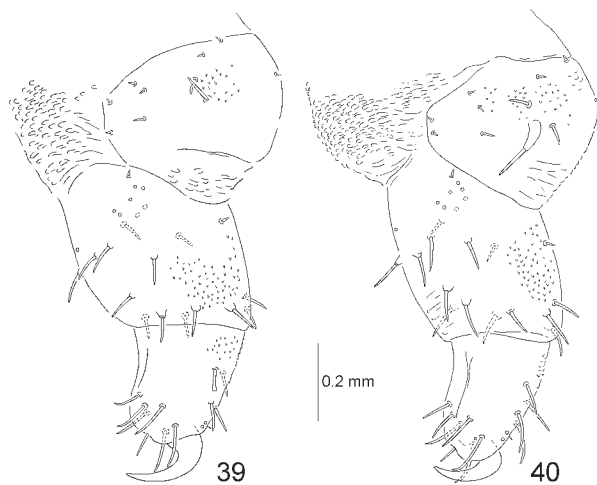


21-29. *Cassida informis*: 21 - frontal side of head; 22 - temporal side of head; 23 - dorsal side of labrum; 24 - ventral side of labrum; 25, 26 - mandibles; 27 28 - palpiger and maxillary palp dorso-laterally; 29 - maxillae and labium





30-38. *Cassida varians*: 30 - frontal side of head; 31 - temporal side of head; 32 - dorsal side of labrum; 33 - ventral side of labrum; 34, 35 - mandibles; 36, 37 - palpiger and maxillary palp dorso-laterally; 38 - maxillae and labium



39, 40. Internal side of leg: 39 - *Cassida informis*; 40 - *Cassida varians*