

## The leafhopper genus *Euscelis* Brullé (Homoptera Cicadomorpha Cicadellidae) in the Southwestern Palaearctis: description of new and remarks on already described taxa.

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**Key words:** Asteraceae, *Helichrysum*, *Artemisia*, Fabaceae, *Chamaespartium*, *Ulex*, *Cytisus*, ecology, zoogeography, Corsica, Iberian Peninsula, Spain, Portugal, Morocco, Algeria, Rif, Moyen Atlas, Iberian mountains, seasonal modificability, dormancy

**Abstract:** A continuation of REMANE 1988: Descriptions with remarks on distribution, host plants, ecology, life cycle of three new species of *Euscelis* Brullé living on Asteraceae (*E. corhelita* n. sp. from Corsica on *Helichrysum italicum*; *E. hihelisto* n. sp. from mountain regions of eastern and central Spain, host plant *Helichrysum stoechas*; *E. hiartalba* n. sp. from the Ebro basin and the region of the Cordillera baetica in Spain, host plant *Artemisia herba-alba*), and of five new species living on perennial, shrubby Fabaceae: *E. gredincola* n. sp. from Spanish Sierras north and northwest of the Sierra de Gredos and the Montes de Leon, host plant a broom like *Cytisus purgans*; *E. chamaespartii* n. sp. from the west of the Iberian Peninsula (Spain, Portugal) and the Rif (Morocco), host plant *Chamaespartium tridentatum*; *E. himargeni* n. sp. from atlantic influenced *Quercus* forests in southern Andalusia (Spain) and the western slopes of the Moyen Atlas (Morocco), host plant(s) a small *Genista* (?) species; *E. rifatmuli* n. sp. from Rif and Moyen Atlas: Djebel Tazzeke (Morocco), host plant a gorse-like taxon (*Ulex* ?); *E. matafalu* n. sp. from western parts of the coastal Dahra range, Monts de Tlemcen (both northwestern Algeria) and Monts de Beni Snassen (Taforalt, northeastern Morocco), same host plant as *E. rifatmuli* n. sp.. The two last mentioned species are allopatrically distributed, their areas are separated by the Moulouya valley. They are very similar to each other and to two Iberian species using the same type of host plant: *E. ulicis* Rib., described from the eastern Pyrenées, now found also in southeastern Spain, and *E. siquadristriatus* Rem., inhabiting the western part of the Iberian Peninsula from the Serra de Monchique (Algarve, Portugal) up to the Cordillera Cantabrica (Prov. Lugo, Spain).

### 2.<sup>1</sup>On some *Euscelis* species inhabiting taxa of the plant family Asteraceae

As known, the taxa of *Euscelis* Brullé sensu strictu use a variety of host plant groups: Besides of a group of rather polyphagous taxa feeding preferably on herbaceous Fabaceae plus Poaceae (*E. incisus* Kbm, *E. alsius* Rib., *E. marocisus* Rem., *E. lineolatus* Brullé, *E. remanei* Strübing, *E. distinguendus* Kbm, etc.) there exist species apparently confined to Fabaceae growing as perennial shrubs like *Ulex*, *Genista*, *Sarothamnus*, *Ononis ramosissimus*, etc (*E. ancoripenis* Rem., *E. genisticola* Rem., *E. ohausi* Wg., *E. siquadristriatus* Rem., *E. ulicis* Rib., etc.). Rather few taxa were up to now known to feed on Asteraceae: *E. ormaderensis* Rem., a polyphagous species, develops also on *Artemisia argentea* (REMANE 1968), and *E. seriphidii* Emeljanov seems to be confined to *Artemisia* taxa of the *Seriphidium* group. During field research in the Mediterranean region some more *Euscelis* species were discovered which seem to be confined to perennial, shrublike Asteraceae.

<sup>1</sup> The general introduction and part 1 („*Euscelis marocisus* n. sp.”) were published in 1988 (Marb. Ent. Publ. 2 (4): 209 – 220).

### 2.1. *Euscelis corhelita* n. sp.

During field research on Corsica (mainly in May 1991) at several places exclusively on *Helichrysum italicum*, an *Euscelis* species was collected (nymphs and adults), which differs from other known *Euscelis* taxa already by external characters: medium-sized, rather stout, distinctly brachypterous (probably wing dimorphic ?); fore wings do not cover the genital segment in males and leave uncovered the last two or even three segments in females, their ratio maximal length to maximal width is 2.1-2.4. Apical cells very short and small. Hind wings  $\pm$  reduced, in some specimens ending distinctly basal of the tip of the clavus, in others they nearly reach the tip of the forewing. Pronotum rather small: vertex nearly as long as the median length of the pronotum. Colouration whitish-grey with straw-coloured (more yellowish) parts on head, prothorax and scutum, two distinct black irregularly shaped spots on the vertex. Complete and contrasting black markings of the face present. Areas with black dots on the wings, locally concentrated to form a pattern like in other *Euscelis*-taxa of the "mottled" type (like *E. distinguendus* Kbm., long-day morphs of *E. incisus* Kbm., *E. alsius* Rib. etc.). As usual the areas with crossveins, and parts of the longitudinal veins, especially the claval veins near the wing's hind margin, are coloured milky white.

Male genital segment, subgenital plates, styli, anal tube, pygofer lobes, genital phragma  $\pm$  like in other *Euscelis*-taxa. Dorsal margins of pygofer-lobes, beside the anal tube ("Dorsalrandstruktur") very specialized (see fig. 19D, 23E): in  $\pm$  dorsal view  $\pm$  semicircularly bent laterally, ending in a slender spine directed mediad. No "Dorsalplatte" or its knoblike "substitute" present. Edeagus (figs 1A, 10C ) similar to that of small specimens of *E. ohausi* Wg., but somewhat smaller. Distal incision deeper and narrower, the distolateral appendages more curved and partially flattened, sperm duct very narrow.

Female genitalia: VII sternite like in other *Euscelis*-taxa. Base of ovipositor and "Intervalvenstück" similar to taxa like *E. lineolatus* Brullé, *E. alsius* Rib. (the details of the female genitalia in *Euscelis* and their use for species recognition will be dealt with in a future publication).

**Measurements** (brachypterous morph only): length (till end of abdomen): ♂♂ 3.5-3.8 mm; ♀♀ 4.1-4.3 mm; width across head: ♂♂ 1.3-1.35 mm, ♀♀ 1.23-1.40 mm, length of metatibia (♂ and ♀): 2.0-2.1 mm.

**Distribution:** So far known from Corsica only, in spite of its host plant being more widely distributed (Italy, southeastern France etc.), but Sardinia might be the most promising place to look for it outside of Corsica.

**Ecology:** *E. corhelita* n. sp. was found at coastal as well as inland localities of its host plant. Annual cycle and number of generations not yet known - during the second half of May 1991 there were collected mainly nymphs and a few adults only. Thus season dependant modificability (like in *E. incisus* Kbm. and other taxa) also of their genitalia cannot yet be excluded.

**Material examined:** Holotypus male: Corsica, Morsiglia, Anse de Anisio, e. l., + 8. VI. 1991, leg. et coll. R. Remane, FB. Biologie, Philipps-Universität, Marburg. - Many Paratypes ♂♂ and ♀♀ (leg. et. coll. R. Remane) from the type locality, from southeast supra Ponte Leccia, from Propriano.

**Discussion:** *Euscelis corhelita* n. sp. differs from all other known european *Euscelis*-taxa by the structure of the dorsal margin of the pygofer lobes. A roughly similar type is known only from *E. alsoides* Rem. from Near East and a taxon from Morocco, but those have completely different edeagi and different host plants. Also the edeagus of *E.*

*corhelita* n. sp. differs (though not very distinctly) from those of other taxa, in addition there exist (constant ?) differences in shape and colouration. Nothing is yet known about the species' vibratory signals, modificability, and number of annual generations.

## 2.2. *Euscelis hihelisto* n. sp.

Found up to now in the central and eastern parts of the Iberian Peninsula, this taxon uses the same "ecological licence" as *E. corhelita* n. sp. in Corsica: it lives exclusively hidden in the dense tufts of *Helichrysum stoechas*, but there is no indication that it is its sister taxon - it seems to belong to a different group of species.

It is a small,  $\pm$  macropterous species with "normal" shape and proportions of body, wings and legs. Colour greyish to creamy white, vertex with two rather small, rounded black spots. Dark pigmentation of the forewing as well as milky white spots distributed like in long day morphs of *Euscelis incisus* Kbm and other taxa of the "mottled type". Due to its small size and whitish colour this taxon may be safely recognized without examination of its genitalic structures.

Male genital segment, subgenital plates, styli, etc.  $\pm$  like in other *Euscelis*-taxa. Dorsal margin of pygofer lobes nearly devoid of special structures, in general shape remembering that of short day morphs of *E. lineolatus* Brullé and others. Nothing but a small, whitish  $\pm$  dentiform structure (an equivalent of the "Dorsalplatte" respectively the white "callus" of other taxa ?) is present at the ventral end of this region. Edeagus (fig. 2A, B, 11C) clearly different from those of all other known taxa: relatively narrow with distinctly sclerotized lateral margins, deep and narrow distal incision of equal width and strong, very long undulated distolateral appendages reaching basal nearly half the length of the shaft.

Female genitalia: Sternite VII not significantly different from those of other *Euscelis* taxa. Base of ovipositor without special characters, "Intervalvenstück" with an approximately triangular central part.

**Measurements:** Length (to tip of forewings)  $\sigma\sigma$  3.5-3.7 mm;  $\varphi\varphi$  3.8-3.9 mm (4.3 mm till tip of abdomen); width across head:  $\sigma\sigma$  1.24-1.3,  $\varphi\varphi$  1.4 mm; length of metatibia 1.9-2.1 mm.

**Distribution:** So far collected in the central and eastern parts of the Iberian Peninsula especially in mountains in altitudes between 1000 and 1800 m (not in coastal region), thus might be ibero-endemic.

**Ecology:** As mentioned, *E. hihelisto* n. sp. seems to live exclusively on *Helichrysum stoechas* - normally rather deep and hidden inside the tufts of its host plant. Its colour is highly protective: it is rather difficult to discover specimens which do not move. It looks like as if *E. hihelisto* n. sp. is a "summer-species", maybe possessing a development cycle correlated with or even dependant from a certain development phase of its host plant. At the moment there is no proof for more than one generation per year, and so is not for the existence of any kind of seasonal dimorphism.

**Material examined:** Holotypus male: Spain, Prov. Granada, east of Sierra de Segura, ne. of Puebla Don Fadrique, ~1500m, 16. 8. 1972, male 2, Remane leg., FB. Biologie, Univ. Marburg. - Paratypes (all leg. et coll. R. Remane) e. g. from same locality and date (5  $\sigma\sigma$ , 8  $\varphi\varphi$ ), in addition from localities in the Sierra Nevada (Laroles, 1700m, 18.8.1972, 1  $\sigma$ , 6  $\varphi\varphi$ ), from Puerto Lobo s. of Huëtor-Santillan, 1120m (21.8.1972, 1  $\varphi$ ), from the Sierra Harana (Diezma, 1000m, 21. 8. 1972, 2  $\varphi\varphi$ , 2. 9. 1995, 1  $\sigma$ ), from the Sierra de Baza (northern side, s. of Caniles: 1800m, 17. 8. 1972, 1  $\varphi$ , 1540m, 2. 8. 1992, 1  $\sigma$ , 1  $\varphi$ , 1200m, 17. 8. 1972, 2  $\varphi\varphi$ , 2. 8. 1992, 2  $\varphi\varphi$ ), from Campo Cebas (w.

of Castril, 16. 8. 1972, 2 ♀♀); Prov. Valencia: near Benageber, ~ 850m, 31. 7. 1979, 2 ♀♀; Prov. Teruel: Sierra de Albarracin (Torres de Albarracin, 1250m, 14. 8. 1972, 2 ♂♂, 4 ♀♀); Prov. Madrid: se of Sierra de Guadarrama (El Berrueco, 930m, 8. 8. 1978, 1 ♀; 22. 7. 1983, 1 ♀); Prov. Segovia, n. of Sierra de Guadarrama, se. supra Segovia, 1130m, 8. 8. 1978, 1 ♂; Prov. Avila: Sierra de Avila (Hija de Dios, 1220m, 9. 8. 1978, 2 ♀♀).

Discussion: *Euscelis hihelisto* n. sp. is easily recognizable by its "external characters" (size, colour, markings), but the structure of its male genitalia (especially the shape of the edeagus) is unique within the *Euscelis* taxa of western Palearctis, too.

### 2.3. *Euscelis hiartalba* n. sp.

Research on the Iberian Peninsula in the steppe areas in the Ebro Basin (Monegros) in eastern and in similar biotopes in southeastern Spain revealed the existence of a very small, clearly wing dimorphic *Euscelis*-taxon living exclusively on the perennial, dwarf shrub-like *Artemisia herba-alba*.

Colour greyish, especially on head and thorax yellowish. Dark markings similar to those of other *Euscelis* taxa of the "mottled" type, two spots on vertex bigger than the others, dorsal line (arch) of the face's marking visible under dorsal aspect. Veins of the forewings lighter than the cells, cross-veins ± milky white. Cells ± regularly bordered (or even filled) with small black dots. Fore wings in brachypterous specimens conspicuously abbreviated, less than twice as long as broad, leaving two or even three abdominal tergites uncovered. The hind wings do not reach to the tip of the clavus.

In macropterous specimens (up to now only females known) the fore wings nearly reach the tip of the abdomen, they are ca. 2.4 times as long as broad, the hind wings reach to the tip of the fore wings.

Male genital segment as in other *Euscelis*-taxa, the edeagus (see fig. 3A, 12 C) shaped similar to those of "short-day-morphs" of taxa like *E. incisus* (Kbm.), *E. alsius* Rib. and others (small distal incision and short, ± laterally directed distolateral appendages!), but dorsal margin of pygofer provided with a well developed "Dorsalplatte" (shaped like in *E. distinguendus* (Kbm.) or *plebejus*- and *subplebejus*-morphs of *E. incisus* (Kbm.) (see REMANE 1967), preceded by a small dent (figs. 20 D, 24 E).

Female genitalia: Sternite VII like in other *Euscelis*-taxa, ventral margin of the "Intervalvenstück" ± semicircular.

Measurements: length (to tip of fore wings) ♂♂ brach. 2.2-2.5 mm, ♀♀ brach. 2.7-2.9 mm, ♀♀ macr. 3.9-4.0 mm, (to end of abdomen: ♂♂ 2.7-3.4 mm, ♀♀ 3.7-4.3 mm); width across head ♂♂ 1.02-1.1 mm, ♀♀ 1.3-1.35 mm; length of metatibia ♂♂ 1.7- 1.8 mm, ♀♀ 2.0-2.2 mm.

Distribution: So far collected in northeastern (Ebro basin and surroundings) and southeastern Spain (region of the Baetic Cordilleras), but may be more widely distributed in other parts of the Iberian Peninsula or even in additional countries around the western Mediterranean due to the wide distribution of its host plant and the existence of similar biotopes (see below) in these countries.

Ecology: *E. hiartalba* n. sp. was found to live on the perennial dwarf shrub *Artemisia herba-alba* (or nearly related taxa), but only in springtime: adults were collected from April (in the South probably already present in March) to beginning of June only (some "old females"). In spite of the host plant being available all the year round, there is apparently no "second generation": *Artemisia herba-alba* in the months from May on till October is populated amongst others by specimens of a *Laburru* species, by a

*Chelidinus*-, a *Chlorita*-, and an *Austroasca* species only. Thus the eggs of *E. hiartalba* n. sp. are supposed to have a rather long dormancy, lasting at least from May to November – a case worthwhile to be examined experimentally.

**Material examined:** Holotypus male: Spain, Prov. Lerida, Pallaruelo de los Monegros, 400m, 14. 5. 1978 (leg. et coll. Remane, FB. Biologie, Univ. Marburg). - Paratypes (all leg. et coll. R. Remane) from same locality and date (11 ♀♀), from 1 km s. Castellldans, ~ 400m, 15. 5. 1978, 2 ♀♀; 4km n. of Castellldans, 15. 5. 1978, ~ 390m, 1 ♂, 15 ♀♀ br., 3 ♀♀ macr.; from Prov. Zaragoza, Bujaraloz, ~ 390m (14. 5. 1978, 1 ♂, 13 ♀♀; 5. 4. 1979, 19 ♂♂, 7 ♀♀; 7. 6. 79, 3 ♀♀); from Prov. Granada, north of Baza, 630 m, 11. 4. 1979, 1 ♂; Prov. Almeria: southern slopes of the Sierra de Baza, northwest above Abia, 960m, 11. 4. 1979, 8 ♂♂, 7 ♀♀; Prov. Murcia: Sierra de Almenara, Puerto de Purias, 550m, 9. 4. 1979, 2 ♂♂, 1 ♀.

**Discussion:** *E. hiartalba* n. sp. is a species well characterized by its small size, its advanced brachyptery, and its sexual dimorphism concerning its size. Also colouration, markings (and habitat) differ from those of all other *Euscelis*-taxa known so far: its colour is highly synchromatic to its host plant: alive specimens are tightly covered with greyish-white brochosomes (as are the *Laburrus* specimens on the same host plant). The male genitalia combine the "Dorsalrandstruktur" of a "long-day-morph" of modifiable taxa with a tiny edeagus resembling that of short-day-morphs of e. g. *E. incisus* (Kbm) - the latter fitting to the months of larval development ("short-day-regime"). Thus "seasonal modifiability" cannot yet be excluded to exist - but Prof. H. Strübing, to whom alive specimens were sent, did not succeed to breed another generation under long day conditions. (But, according to her, the vibratory signals of *E. hiartalba* n. sp. were very different from those of all other *Euscelis* taxa recorded so far).

### 3. Some additional *Euscelis* taxa inhabiting perennial, shrubby Fabaceae

The Iberian Peninsula seems to be not only very rich in species of perennial, shrubby Fabaceae (e. g. *Genista*, *Calicotome*, *Ulex*, *Ononis*, *Chamaespartium*, *Cytisus*), but also in *Euscelis* taxa specialized on some or even one of these plant taxa. Two of these already have been described from sites outside of the Iberian Peninsula (*E. ohausi* W. Wagner including *E. singeri* W. Wagner from central and northwestern Europe, and *E. ulicis* Ribaut from the Pyrenées orientales near the Iberian borderline). Four species were described by REMANE 1967: Three of them from the western part (Portugal: *E. ancoripenis* Rem., *E. genisticola* Rem., *E. siquadristriatus* Rem.), one from the coastal areas of the Mediterranean and the Southwest of the Iberian Atlantic coast (*E. ononidis* Rem.).

Additional taxa using this type of habitat have been found by the author during the past thirty years of field research not only on the Iberian Peninsula, but also in northwestern Africa (Morocco, Algeria):

#### 3. 1 *Euscelis gredincola* n. sp.

A medium sized creamy white species resembling *E. ohausi* var. *quadrilineata* Rib., 1952, but the black markings of the fore wings even more condensed on each fore wing into two longitudinal lines, which are narrower and straighter than those in *quadrilineata* Rib.. Dark markings also present in the apical and some of the subapical

cells. Pronotum with four black longitudinal stripes. Vertex with two rounded black spots, few specimens with additional black markings. Size and proportions like in *E. ohausi quadrilineata* Rib.. Slightly wing dimorphic, but hind wings even in the females of the "brachypterous" morphs reaching the tip of the clavus. Fore wings in males between 2.6 and 2.9 times as long as broad, 2.46-2.7 in females.

Genital segment of the male like those of other *Euscelis* taxa, dorsal margin of pygofer with a "Dorsalplatte", preceded by a small dent (similar to that of *E. ohausi* Wg.). Edeagus somewhat similar to that of long day morphs of *E. ormaderensis* Rem.: shaft rather broad with "broad" sperm duct, distal incision rather short and widely open at the end, distal lobes short, broadly rounded, their distolateral appendages (originating laterally at about half the depth of the distal incision) curved back to the shaft, their tips are situated distinctly basad of the phallotreme (see figs. 4 A, B, 13 C).

Female genitalia: Sternite VII as in other *Euscelis* taxa, ventral margin of the "Intervalvenstück" ± semicircular (not triangular as in *E. ohausi* Wg.).

**Measurements:** Length (to tip of fore wings) ♂♂ 4.15- 4.4 mm, ♀♀ 4.2-4.35 mm (up to 5.4 mm till tip of abdomen); width across head: ♂♂ 1.4-1.45 mm, ♀♀ 1.6 mm; length of metatibia 2.25-2.7 mm.

**Distribution:** *E. gredincola* n. sp. was first collected in the mountain region northwest of the Sierra de Gredos (Sierra de Candelario, Sierra de Villafranca), later also slightly more eastward in the Sierra de Paramera and - widely separated – in northwestern Spain near the southern limit of the Montes de Leon (se. of La Bañeza). The collecting sites were situated between 1000 and 1600m altitude in the Gredos region and at 900m in the Montes de Leon. – *E. gredincola* n. sp. might prove to be an endemic taxon of the central and northwestern parts of the Iberian Peninsula.

**Ecology:** In the Gredos region *E. gredincola* n. sp. lives in a kind of "regional monophagy" on the bushes of unidentified Fabaceae looking very similar to *Cytisus purgans*, i. e. it has densely packed, straight and vertically directed greyish-green branches bearing few leaflets only. In some places also *E. ohausi* Wg. is found on these plants (e. g. *E. ohausi quadrilineatus* Rib. on *Cytisus purgans* in the Pyrenées orientales) – these populations show a similar "striped" marking as does *E. gredincola* n. sp.: a "protecting", adaptive type of colouration? The specimens from the Montes de Leon, however, were collected on another unidentified bushy broom taxon. *E. gredincola* n. sp. very probably has only one generation per year and is supposed to survive winter conditions as eggs. Adults were collected in August and September. Probably no seasonal modifiability will be found in this species.

**Material examined:** Holotypus male: Spain, Prov. Avila, Sierra de Candelaria, Puerto de Tremedal, 1200-1600m, 11. 8. 1978, leg. et coll. Remane, FB. Biologie, Univ. Marburg. - Paratypes (all leg. et coll. R. Remane) from same locality and date (2 ♂♂, 2 ♀♀), from 10. 8. 1978 (10 ♂♂, 2 ♀♀), 11. 9. 1976 (2 ♂♂, 2 ♀♀) and 8. 8. 1972 (3 ♂♂, 1 ♀); from Sierra de Villafranca east of Barco de Avila, ~ 1000m, 8. 8. 1972, 1 ♂; from Sierra de Paramera, ne. Mengamuñoz, 1270 m, 10. 8. 1978 (4 ♂♂, 1 ♀♀); and from Prov. Leon, Herreros de Jamuz (sw. of La Bañeza), 900m, 15. 8. 1978 (3 ♂♂, 2 ♀♀).

**Discussion:** In spite of its similarity to *E. ohausi quadrilineata* Rib. *E. gredincola* n. sp. is a "biospecies" of its own: it differs from similarly marked *E. ohausi* morphs not only by its more whitish colour and the shape of the black stripes on the fore wings but also by the shape of its edeagus and of its "Intervalvenstück". According to Prof. Strübing (to whom some alive specimens from Mengamuñoz were sent) the vibratory signals of *E. gredincola* n. sp. differ distinctly from those of *E. ohausi* Wg. and other *Euscelis* taxa

(verbal communication) – a result to be expected due to the practically syntopic and synchronous occurrence of these two species.

### 3. 2. *Euscelis chamaespartii* n. sp.

A medium sized, slightly wing dimorphic species, ground colour with a brownish tinge, dark markings of the "mottled" type, but weakly expressed (in some specimens nearly lacking). Dark markings of the head complete, but in most specimens not black, but reddish-brown, no spots of the vertex-markings enlarged. Fore wings in males 2.6-2.8 times, in females 2.4-2.5 times as long as broad, in many specimens with irregular, supernumerary crossveins, in most specimens the "normal" crossvein areas slightly milky white. Hind wings in "brachypterous" specimens reaching at least to the tip of the clavus.

Male genital segment very characteristic: subgenital plates with a long and rather acute distal part, pygofer lobes with a long caudal part ending in a rather acute tip. Structures of the dorsal margin of the pygofer lobe of the "big dent – small callose plate" type (as in *E. ancoripenis* Rem. and *E. genisticola* Rem.): a big, robust, triangular dent curved mediad is followed by a small whitish callose structure (apparently the – relictary ? – equivalent of the "Dorsalplatte" of other *Euscelis* taxa) (see figs. 21 D, 25 E). Edeagus with an absolutely and relatively to its length broad shaft with a very deep distal incision which has nearly parallel sided margins near its base (see figs. 5 A, B), but a very thin sperm duct. Distal lobes very long, ending in very long, but rather slim recurved distolateral appendages, which reach back in direction to the shaft's base along its sides nearly half of the shaft's length (see fig. 14 C).

Female genitalia: Sternite VII not differing from those of other *Euscelis* taxa, but "Intervalvenstück" species specific: its dorsoventral length distinctly surpassing its lateral length.

Measurements: Length (to tip of fore wings): ♂♂ 4.1-4.4 mm, ♀♀ 4.0-4.2 mm (up to 5.2 mm till end of abdomen); width across head 1.4-1.57 mm; length of metatibia 2.4-2.6 mm.

Distribution and Ecology: So far known from the northwestern part of the Iberian Peninsula and the Rif Mountains in northwestern Africa (Morocco). *E. chamaespartii* n. sp. was discovered in 1972 in the Portuguese Serra da Estrela: A single, macropterous, apparently migrating male was collected near the highest point, the Torre region, at 1800m. Subsequent search for this taxon was in vain until 1976 when a small population was collected in Morocco in the Rif Mountains at 1400m, the host plant there being *Chamaespartium tridentatum*. Knowing the host plant I now succeeded to find this taxon not only in northern Portugal, but also in western central Spain (region of the Sierra de Peña de la Francia) and in the Spanish mountain ranges north and northeast of Portugal (Provinces Orense, Zamora and Leon). As it seems, *E. chamaespartii* n. sp. lives monophagous on *Chamaespartium tridentatum*, its colour "fits" rather well to the more basal parts and dead "leaves" of this plant. All localities so far known are situated at altitudes between 700 and 1500m. There is probably one generation per year (and up to now no signs for seasonal modificability have been found), adults were collected in the months of July and August (but certainly will be present at least till October), hibernation probably as eggs.

Material examined: Holotypus male: Spain: Prov. Salamanca, Sierra de Peña de la Francia, Los Lobos, ~ 1500m, 11. 8. 1978, male 2 (leg. et coll. R. Remane, FB. Biologie, Univ. Marburg). - Paratypes (all leg. et coll. R. Remane) from same locality

and date (1 ♂), 19. 8. 1990, 2 ♀♀; north of Alberca (Nava de Francia), 15. 8. 1982, 1 ♂; Puerto de las Batuecas, 1240m, 15. 8. 1982, 2 ♂♂; Sequeros, 850m, 11. 8. 1978, 6 ♂♂, 8 ♀♀; Portugal: Prov. Guarda, Serra da Estrela, Torre region, 1800m, 5. 8. 1972, 1 ♂; Prov. Vila Real, s. Vila Chã, 29. 7. 1983, 2 ♂♂, 2 ♀♀; Prov. Braganca, n. Trindade, 740m, 13. 8. 1978, 1 ♂; Spain: Prov. Orense, Montes de Testeiro, e. Altos de Parano, 830m, 15. 8. 1990, 6 ♂♂, 5 ♀♀; Maceda (east of Orense), 29. 7. 1983, 1 L5; Prov. Zamora, sw. Justel, 950m, 14 ♂♂, 11 ♀♀; Prov. Leon, w. Castrocontrigo, 30. 7. 1983, 1 ♀. – Morocco, Rif Mountains, Bab Besen, ~ 1400m, 16. 8. 1976, 2 ♂♂, 2 ♀♀.

**Discussion:** *E. chamaespartii* n. sp. is a member of a group of four taxa (*E. ancoripenis* Rem., *E. genisticola* Rem., and *E. himargeni* n. sp. described below), which possess a rather specialized structure of the dorsal margin of the pygofer lobe: the "dent", present also in many other *Euscelis* taxa, is very large, voluminous, ± triangular, curved mediad, at the place of the "Dorsalplatte" however there is a small, whitish callus only. (Whether this special configuration might be taken as a synapomorphic character or as a phenetic similarity only, cannot be decided here). The edeagi of these four taxa are very different from each other (and the base of the female ovipositor including the "Intervalvenstück", too), thus species discrimination is easy. All other European and circummediterranean *Euscelis* taxa possess structures of the pygofer lobe's dorsal margin, which are constructed differently and, in addition, different colours, markings, sizes, and genitalic structures. Only in populations of *E. ohausi* Wg. from Southeastern Spain there exist specimens with an edeagus of similar size and proportions, but these edeagi show a much broader sperm duct, thicker distolateral appendages and a distal incision without parallel margins near its base (besides of different colouration and markings, different dorsal margin of pygofer lobe etc.). – The vibratory signals of *E. chamaespartii* n. sp. seem to be very similar to those produced by *E. ohausi* Wg. (Strübing, verbal communication) – in field these two species may be found in the same place, but were never found on the same host plant: There is no need for "vibratory character displacement".

### 3. 3. *Euscelis himargeni* n. sp.

A reddish brown species, in size, proportions, colour and markings not differing from *E. genisticola* Rem. (see figs. F 2 a-c in REMANE, 1967) and like this species living on a small, *Genista anglica*-like Fabaceae growing in *Quercus* forests.

Male genital segment as in other taxa except the structure of the dorsal margin of the pygofer lobe: as mentioned before, *E. himargeni* n. sp. belongs to the "big dent – small, callose plate" type: its "dent" is rather long and thin, the whitish callus rather big, in addition the adjacent part of the pygofer lobe's dorsal margin is whitish and callose, too (see figs. 20 D, 26 E). Edeagus (see figs. 6 A, 15 C) very similar to those of some Iberian *E. ohausi* Wg. populations (a recognition of *E. himargeni* n. sp. by the shape of the edeagus alone might be difficult), but shaft narrowing rather suddenly from the base of the deep but narrow distal incision towards the base of the long and thick distolateral appendages.

Female genitalia: Base of ovipositor without special characters, "Intervalvenstück" species specific: high oval central part, quite different from the structures found in *E. genisticola* Rem. as well as in *E. ohausi* Wg. and the other two taxa of the "big dent – small callose plate" type.



**Measurements:** Length (to tip of fore wings) ♂♂ 3.55-4.10 mm, ♀♀ 3.8-4.0 mm (about 4.7 mm to tip of abdomen); width across head 1.40-1.51 mm, length of metatibia 2.3-2.4 mm.

**Distribution and Ecology:** May be a "rare" species, up to now found in two localities in the extreme South of the Iberian Peninsula (Spain, Andalusia) in the zone of *Quercus* forests growing under "atlantic" climatic conditions and in a similar *Quercus* forest in Northwestern Africa at the western slope of the Moyen Atlas (Morocco) southwest of Azrou (altitude 1400m) only. In Spain it was found on a small *Genista* species (aspect of *G. anglica*), in Morocco it was another taxon growing in a similar way near the ground. All specimens were collected in July and August – nothing is known about the number of generations (but maybe one per year only ?) or about seasonal modificability.

**Material examined:** Holotypus male: Spain, Prov. Cadiz, Casas del Castaño (situated half way between Algeciras and Alcalà de los Gazules), ~ 400m, 12. 8. 1976, male 1 (leg. et coll. R. Remane, FB. Biologie, Univ. Marburg). - Paratypes (all leg. et coll. R. Remane) from same locality and date (1 ♂, 1 ♀), from south of Ubrique, ~ 600m, 16. 7. 1980, 1 ♂; 5. 8. 1992, 1 ♂, 1 ♀; from Morocco, Moyen Atlas sw. supra Azrou, ~ 1400m, 13. 8. 1992, 1 ♂, 1 ♀.

**Discussion:** In spite of its high similarity in size, proportions, colour and markings to *E. genisticola* Rem. this taxon is easily distinguishable by the pygofer structures as well as by the shape of the edeagus and the base of ovipositor with "Intervallenstück" not only from *E. genisticola* Rem., but by these and additional characters also from all other *Euscelis* taxa known so far. Its distribution as well as its host plant range and its life cycle are imperfectly known, its vibratory signals not at all.

### 3. 4. *Euscelis ulicis* Ribaut, *E. squadristriatus* Remane, *E. rifatmuli* n. sp. and *E. matafalu* n. sp.: a group of allopatric taxa using the same "ecological licence"

When REMANE (1967) described *Euscelis squadristriatus* Rem. from southern Portugal, he did not know *Euscelis ulicis* Ribaut, 1952, from the mediterranean part of the eastern Pyrenées, except from RIBAUT's excellent and precise description, but decided *E. ulicis* Rib. to be the taxon most similar to his new species in size, colouration and markings, in spite of the obvious differences in the shape of the edeagus. But he supposed *E. ulicis* Rib. to possess a structure of the dorsal margin of the pygofer lobe not like in *E. squadristriatus* Rem., but similar to that of *E. genisticola* Rem., i. e. to belong to the group "big dent – small callose plate" (l. c.: 5). In the meantime the author succeeded in collecting *E. ulicis* Rib. in many localities especially in southeastern Spain (e. g. Sierra Nevada). It lives in the spiny shrubs of a gorse-like taxon (*Ulex parviflorus* ?) (and of taxa with externally similar shape ?) during the months of August (but probably – depending on the altitude of the locality – already in July or even June and still in September), probably has one generation per year and might hibernate as eggs (no specimens – neither adults nor nymphs – were seen in the known localities during research in April and May). Concerning colouration, markings, size and proportions *E. ulicis* Rib. is that similar to *E. squadristriatus* Rem., that it seems impossible to distinguish these taxa by these characters. Also the structures of the dorsal margin of the pygofer lobe are very similar to those of *E. squadristriatus* and not to *E. genisticola*: only the "Dorsalplatte" of *E. ulicis* Rib. is more variable in shape and position (in some specimens it is directed nearly vertically, in some others it is a small lobe only). The

shape of the edeagus (see figs. 7 A, B, 16 C) is the only remaining character safely separating these two taxa, which are in addition separated geographically: *E. ulicis* Rib. is known so far from the eastern parts of the Iberian Peninsula from the Pyrenées (in the Pyrenées even "outside" of that region) down south to the region west of Ronda in Andalusia, whereas *E. siquadristriatus* Rem. so far is known from the western part of it: The author has collected it by now in southern Portugal (Algarve: Serra de Monchique and Prov. Setubal: Sines, type locality), northern Portugal (Provinces of Guarda and Viseu) and in northwestern Spain (Prov. Lugo). (A critical field research concerning its host plants seems desirable: maybe it feeds and develops also on *Ulex europaeus* or even other Fabaceae taxa). Further examinations "east - west across the Peninsula" have to answer the question, whether these two taxa meet somewhere and whether there exists an introgression zone, a hybrid belt or at least a clinal change of the shape of the edeagus from one taxon to the other.

Examining the same "type" of host plant in northern Morocco and northwestern Algeria has shown there to exist two groups of populations which in all externally visible characters are identical with *E. ulicis* Rib.: both of them agree with *E. ulicis* / *E. siquadristriatus* and with each other in size, proportions, colour and markings, and also in the structures of the genital segment including the "Dorsalrandstruktur", but show rather differently shaped edeagi. The first of these population groups was found in the Rif mountains and in the northeastern parts of the Moyen Atlas (mountain region of the Djebel Tazzeka). The populations of the second group inhabit the mountain areas east of the Moulouya valley: The Taforalt region (Monts de Beni Snassen) in Morocco, the Monts de Tlemcen and the coastal mountains between Mostaganem and Ténès in Algeria.

As in *E. ulicis* Rib. and *E. siquadristriatus* Rem. the differences in the shape of the edeagus very probably are genetically controlled and do not result from modifying climatic conditions (climatic conditions between localities within each taxon are by far much more diverse – due to altitude, latitude etc. – than those between some localities inhabited by different taxa), the differences in the shape indicate the lack of geneflow between these taxa, i. e. these taxa should be regarded as distinct species, unless new facts indicate the existence of such a geneflow under natural conditions. The same conclusions may be drawn for the two population groups in Morocco and Algeria, thus they are described as two species of their own:

### 3. 4. 1. *Euscelis rifatmuli* n. sp.

Size, proportions, colour and markings as in *E. ulicis* Rib. and *E. siquadristriatus* Rem., i. e. rather small, slightly wing dimorphic, whitish grey with two round black spots on the vertex and dark markings arranged (if present at all) in two longitudinal, ± irregularly shaped stripes on each fore wing (for comparison see figs. F 4a and F 4b of *E. siquadristriatus* published by REMANE 1967: 34) and four dark lines on the pronotum.

Male genitalia as in *E. ulicis* Rib. except the shape of the edeagus (fig. 8 A, 17 C), which has a shape somewhat intermediate between that of *E. ohausi* Wg. on the one and *E. gredincola* n. sp. on the other side: shaft parallel sided, rather broad compared with its length, ending in two rather amply rounded distal lobes (rounding more ample than in *E. ohausi* Wg., less ample than in *E. gredincola* n. sp.). Distal incision V-shaped, nearly as long as broad at its distal end. Distolateral appendages rising from the side of the lateral lobes, curved back under the shaft, ending more basad than the phallotrema,

which is situated rather near the base of the distal incision (at a distance of less than half of its length).

Female genitalia: "Intervalvenstück" with a higher than semicircularly rounded ventral margin.

Measurements: Length (to tip of fore wings): 3.2-3.6 mm (to tip of abdomen ~ 4.4 mm); width across head: 1.30-1.44 mm, length of metatibia: 2.0-2.15 mm.

Distribution and ecology: So far known from northern Morocco: Rif mountains and Moyen Atlas (Djebel Tazzeka), living there at altitudes of 1230m (Rif: Bab Berred) and about 1400m (Djebel Tazzeka: Bab Bou Idir). Collected in August (but probably present as adults in July and September as well). Host plant: a gorse-like taxon (*Ulex* species ?). Presumably one generation per year, very probably a "non-modifiable" taxon.

Material examined: Holotypus male: Morocco, Rif mountains, 4 km east of Bab Berred, 1230m, 16. 8. 1976, leg. et coll. R. Remane, FB. Biologie, Univ. Marburg. – Paratypes (all leg. et coll. R. Remane): from same locality and date: 1 ♂, 4 ♀♀; from Moyen Atlas, Djebel Tazzeka, Bab Bou Idir, 1400m, 22. 8. 1976, 15 ♂♂, 15 ♀♀.

Discussion (see already above): A taxon of the *E. ulicis* group, its area probably does not overlap with that of the three additional taxa of this group. Edeagus distinctly differing in shape from the edeagi of the two European taxa, more similar to that of the second Maghreb-taxon (see below).

### 3. 4. 2. *Euscelis matafalu* n. sp.

As mentioned before, in all characters of size, proportions, colouration and markings like *E. rifatmuli* n. sp. and the European taxa *E. ulicis* Rib. and *E. siquadristriatus* Rem.. Also male genital segment very similar (maybe subgenital plates somewhat shorter than in *E. rifatmuli* n. sp., edeagus, however, somewhat differing in shape (see figs. 9 A, 18 C) from that of *E. rifatmuli* n. sp., though rather similar: shaft shorter, relatively more slender, slightly constricted from the phallotrema towards its end, distal lobes rather narrow, laterodistal appendages originating from the distal end of the lobes. Sperm duct absolutely and relatively broader, phallotrema situated nearer to the base of the distal incision (distance phallotrema to basis of incision only one third of the incision's length).

Female genitalia: "Intervalvenstück" smaller, its ventral margin nearly triangular (hyperbolic).

Measurements: As in *E. rifatmuli* n. sp..

Distribution and ecology: So far known from northeastern Morocco from the Monts de Beni Snassen (Taforalt) east of the Moulouya valley (which is known to separate the areas of nearly related taxa also in other groups of insects) and from mountain ranges in northwestern Algeria (Monts de Tlemcen and western part of the coastal Dahra range). Collected in July and September (but ought to be present in August, too), host plant as in *E. rifatmuli* n. sp.. Altitude of the collecting localities between 300 and 1150m. Other data not yet known.

Material examined: Holotypus male: Algeria, Wilaya Mostaganem, western part of Dahra range, ne. Sidi Lakhdar, ~ 300m, 29. 7. 1980, leg. et coll. R. Remane, FB. Biologie, Univ. Marburg. – Paratypes (all leg. et coll. R. Remane): same locality and date, 1 ♂, 1 ♀; Wilaya Tlemcen: Monts de Tlemcen, s. supra Tlemcen, ~ 1150m, 27. 7. 1980, 3 ♂♂, 1 ♀; Morocco, Prov. Oujda, Monts de Beni Snassen, s. Taforalt, ~ 830m, 25. 7. 1980, 4 ♂♂, 5 ♀♀; 4. 9. 1982, 2 ♂♂, 2 ♀♀.

Discussion (see already above): Probably the nearest relative of *E. rifatmuli* n. sp., but differing from that taxon in details of the male edeagus and the female "Intervalvenstück" – specimens from Taforalt, Tlemcen and Sidi Lakhdar completely agree in the shape of these structures though the distance between the populations of Sidi Lakhtar and Taforalt (nearly 300 km) is larger than the distance Taforalt – Djebel Tazzeka (about 180 km only) between *E. matafalu*- and *E. rifatmuli*-populations. Further research has to show, whether the assumptions of four allopatrically distributed, but closely related "gorse" inhabiting species made here meet the facts or have to be modified.

### Zusammenfassung

In Fortsetzung des ersten Teils (generelle Einleitung und Abschnitt 1: Beschreibung von *Euscelis marocisus* Remane), der 1988 in dieser Zeitschrift publiziert wurde (Marb. Ent. Publ. 2 (4): 209-220), werden in dieser Arbeit die Abschnitte 2 (Über einige, Asteraceen-Arten besiedelnde *Euscelis*-Arten) und 3 (Einige weitere, ausdauernde strauchförmige Fabaceen besiedelnde *Euscelis*-Arten) veröffentlicht. An ausdauernden Asteraceen leben *E. corhelita* n. sp., bisher nur auf Korsika gefunden, an *Helichrysum italicum*; *E. hihelisto* n. sp. in den östlichen und zentralen Gebirgen Spaniens an *Helichrysum stoechas* und *E. hiartalba* n. sp. im Ebro-Becken und in der Baetischen Cordillere in Spanien an *Artemisia herba-alba*. Während für *E. corhelita* n. sp. die Zahl ihrer Generationen pro Jahr und auch die Frage einer eventuellen Saisonmodifikabilität noch nicht geklärt sind, dürften *E. hihelisto* n. sp. und *E. hiartalba* n. sp. nur eine Generation pro Jahr haben – eine Saisonmodifikabilität ist bei ihnen vermutlich nicht vorhanden. Dabei ist *E. hihelisto* n. sp. eine "Sommer-Art" (Adulte bisher von Juli bis September gefangen), *E. hiartalba* n. sp. dagegen eine "Frühlingsart" (Adulte von April bis Anfang Juni gefangen, Larvalentwicklung also vermutlich von Januar/Februar bis März/April), die ihre ganzjährig grüne Nährpflanze offenbar nur in diesem "Zeitfenster" nutzen kann (obwohl sich in den Folgemonaten zahlreiche andere Zikadenarten auf dieser Pflanze entwickeln) und dementsprechend eine sehr lange Eidormanz besitzen muß.

Von perennierenden, strauchförmigen Fabaceen werden fünf Arten neu beschrieben und für einige weitere ergänzende Daten zu Verbreitung und Ökologie gegeben: *E. gredicola* n. sp. wurde im Bereich einiger dem Sierra de Gredos-Massiv im westlichen Zentralspanien vorgelagerten Gebirge in Höhenlagen zwischen 1000 und 1600m an einem *Cytisus purgans*-ähnlichen „Besenginster“ und am Südostrand der Montes de Leon in Nordwestspanien an einer anderen Ginsterart gefunden. *E. chamaespartii* n. sp. wurde bisher in den Berggebieten Mittel- und Nordportugals, des zentralen Westspaniens (Sierra de Peña de la Francia), in Nordwestspanien (Westteil des Kantabrischen Gebirges) und im Rifgebirge (Marokko) gefunden, sie lebt monophag an *Chamaespartium tridentatum*. *E. himargeni* n. sp. liegt von zwei Fundorten in atlantisch geprägten Eichenwäldern Süd-Andalusiens in Spanien und einem ähnlichen Eichen-Berghangwald im Mittleren Atlas (Azrou, Marokko) vor, Nährpflanze ein kleiner, bodennah wachsender Ginster vom *Genista anglica*-Typ in Spanien, eine andere bodennahe Ginsterart in Marokko. Die beiden folgenden Arten, *E. rifatmuli* n. sp. aus dem Rifgebirge und dem östlichen Mittleren Atlas (Djebel Tazzeka) in Marokko und *E. matafalu* n. sp. in den durch das Moulouya-Tal von Rif und Mittlerem Atlas getrennten Berggebieten der Monts de Beni Snassen in Nordost-Marokko sowie den Monts de Tlemcen und den Westausläufern der küstennahen Dahra-Kette in Nordwestalgerien

bilden zwei der vier Mitglieder einer Gruppe von allopatrisch verbreiteten Taxa, die allesamt an *Ulex*-artigen, ein dichtes Stachelgewirr bildenden,  $\pm$  hellgrünen Ginstern leben, also dieselbe ökologische Lizenz nutzen. In Europa wird diese Gruppe durch *E. ulicis* Rib., verbreitet von den mediterranen Ostpyrenäen (Frankreich: Banyuls !) bis in den Südosten Spaniens (Sierra Nevada und westlich Ronda) und durch *E. siquadristriatus* Rem. im Westen der Iberischen Halbinsel (Südportugal bis Nordwestspanien) vertreten. Diese vier Arten sind in Größe, Proportionen, Färbung und Zeichnung und sogar in der Form der Pygophor-Dorsalrandstrukturen äußerst ähnlich – Unterschiede finden sich (bisher) nur in der Aedeagus-Form der Männchen (und zumindest z. T. im „Intervallvenstück“ der Weibchen): sie bilden höchstwahrscheinlich eine Gruppe nächstverwandter Taxa. Die anderen drei Taxa sind untereinander und von allen anderen Taxa deutlich in mehreren Merkmalen (auch in der oft als „Verbergtracht“ auffaßbaren Färbung und Zeichnung) verschieden, zudem überlappen sich ihre Areale untereinander. *E. himargeni* n. sp. ist zwar in Färbung und Zeichnung *E. genisticola* Rem. sehr ähnlich, doch sind die Genitalstrukturen beider Geschlechter sehr unterschiedlich gebaut. Alle diese fünf (bzw. sieben) Fabaceen-Besiedler-Taxa sind "Sommerarten", deren Adulte von Juni bis ca. September zu finden sind und bei denen bisher alles für die Existenz von nur einer Generation pro Jahr mit in Dormanz überwinterten Eiern zu sprechen scheint – eine saisonale Modifizierbarkeit ihrer Farben und Strukturen erscheint unwahrscheinlich. Weitere Untersuchungen zur Verbreitung, zum Nährpflanzenspektrum und zum Entwicklungszyklus der hier behandelten Arten müssen die derzeit noch offenen Fragen zu klären versuchen.

### Acknowledgements

My sincere thanks are submitted to Adalgisa Guglielmino, to Christina Mengel and to Christoph Bückle for generous and efficient help in preparing this and some other publications of this volume.

### Literature cited

REMANE, R., 1988: The leafhopper-genus *Euscelis* Brullé (Homoptera Auchenorrhyncha Cicadellidae) in the southwestern Palearctis: descriptions of new and remarks on already described taxa. 1. *Euscelis marocisus* nov. spec. – Marburger Entomol. Publikationen 2 (4) 1988: 209–220, 3 Figs.

All other publications cited are already listed in REMANE 1988, they are not repeated here.

### Explanation of figures

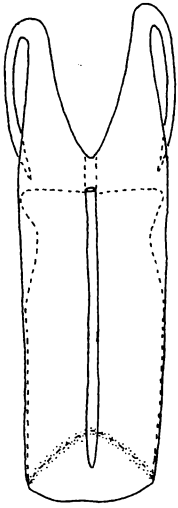
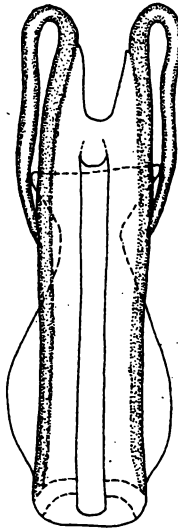
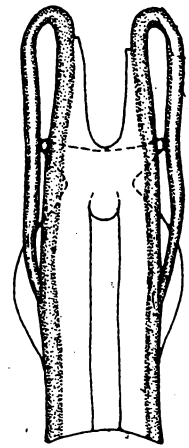
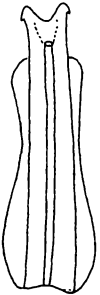
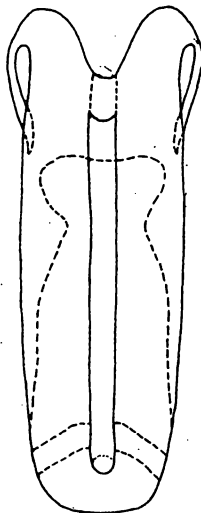
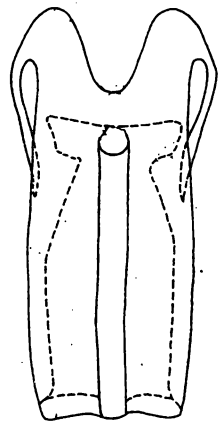
A: Edeagus (dorsocaudal view)

B: Edeagus (distal part viewed perpendicular)

C: Edeagus (lateral view)

D: "Dorsalrandstruktur" of genital segment's (right) pygofer lobe (in dorsocaudal view)

E: "Dorsalrandstruktur" (in lateral view)

**1 A****2 A****2 B****3 A****4 A****4 B**

0.1 mm

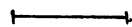


Fig. 1 A. *Euscelis corhelita* n. sp.: Corsica, (Male1) Morsiglia (Holotypus) - Fig. 2 A, B: *Euscelis hihelisto* n. sp.: Spain: Prov. Granada, Sierra Nevada, Laroles, (Paratype) - Fig. 3 A: *Euscelis hiartalba* n.sp.: Spain, Prov. Lerida, Male Castellidans (Paratype) - Fig 4 A, B: *Euscelis gredincola* n. sp.: Spain, Prov. Avila, Sierra de Candelaria, n. supra Tremedal de Avila, (Paratype).

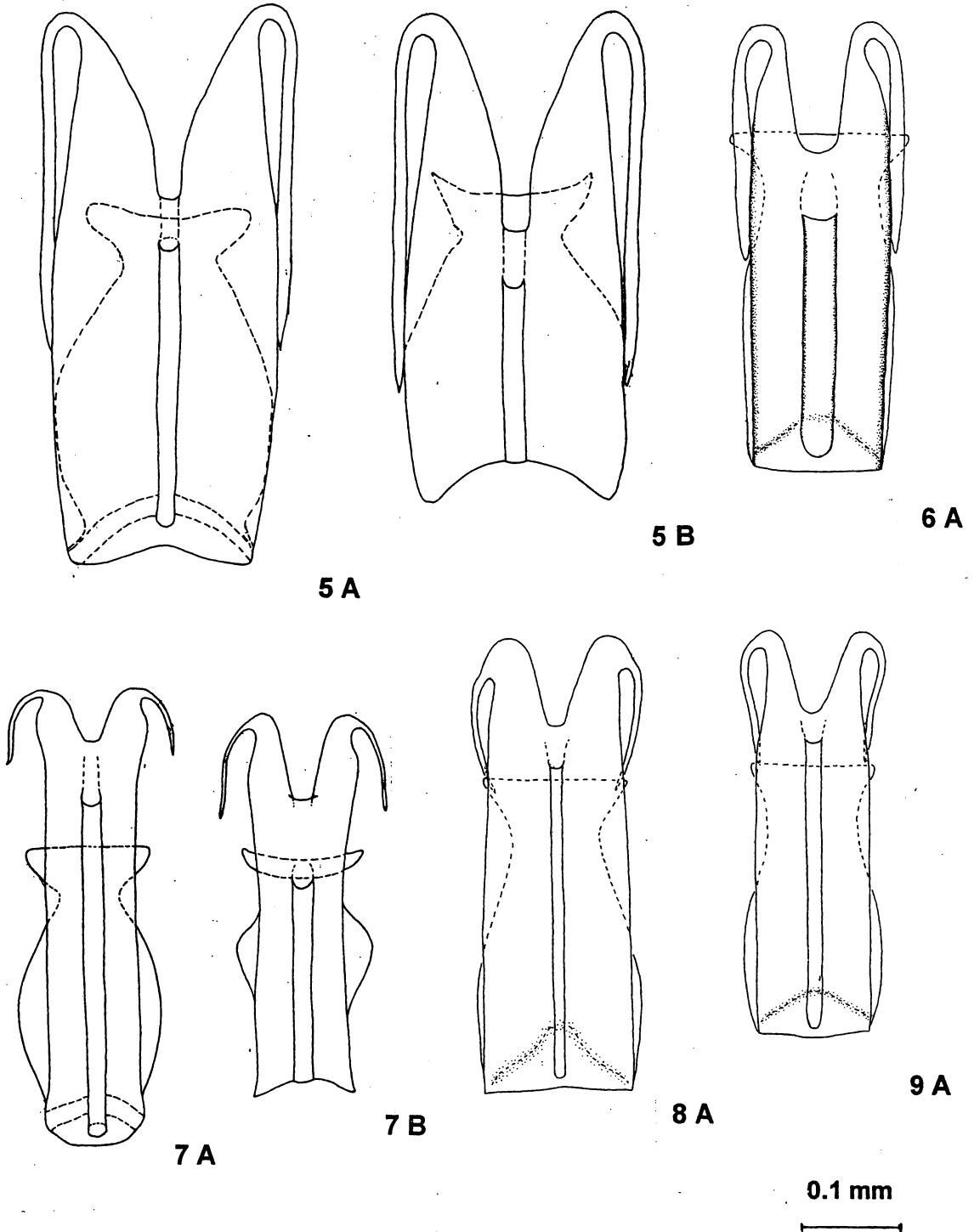


Fig. 5 A, B: *Euscelis chamaespartii* n. sp.: Portugal, Prov. Guarda, Serra d'Estrela, near Torre, 1800m (Paratype) - Fig. 6 A: *Euscelis himargeni* n. sp.: Spain, Prov Cadiz, Casas del Castaño (Holotypus) - Fig. 7 A, B: *Euscelis ulicis* Ribaut: Spain: Prov. Granada, Sierra Harana, sw. Huëtor-Santillan - Fig. 8 A: *Euscelis rifatmuli* n. sp.: Morocco: Rif Mountains, Bab Berred, (Holotypus) - Fig. 9 A: *Euscelis matafalu* n. sp.: Algeria: Wil. Mostaganem, ne. Sidi Lakhdar, (Holotypus).

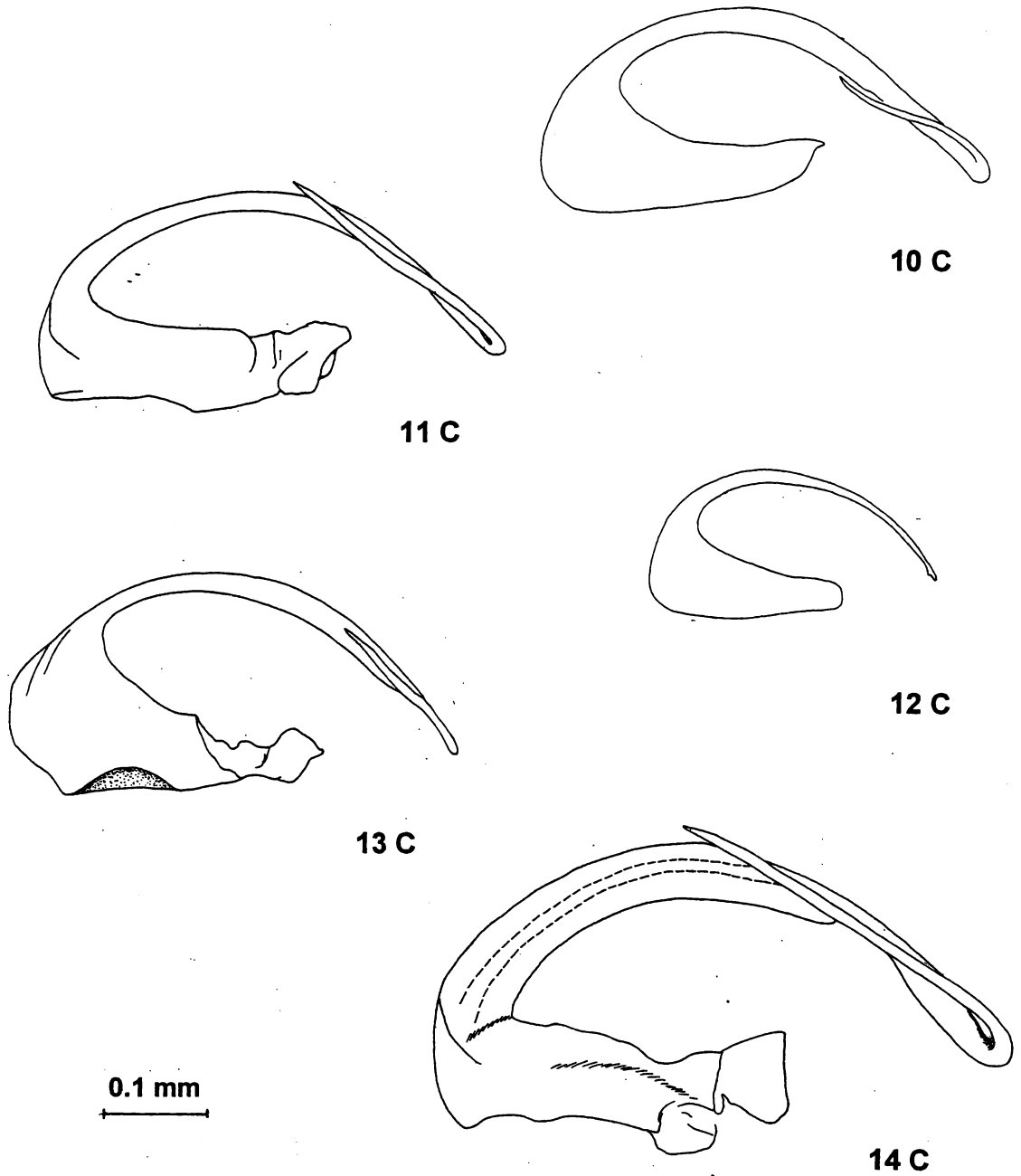
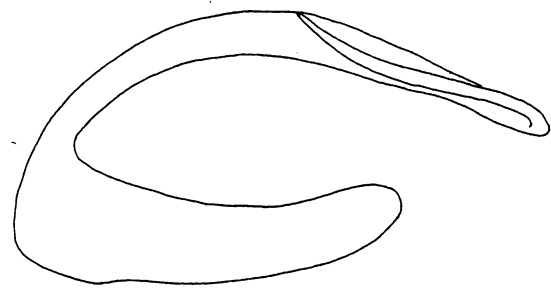
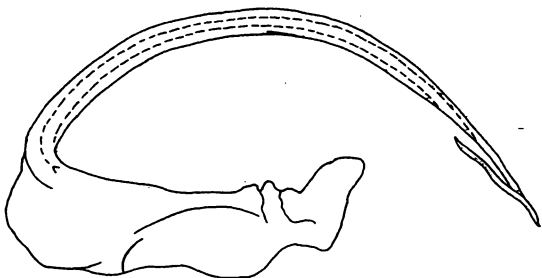


Fig. 10 C: *Euscelis corhelita* n. sp.: (Loc.: see Fig. 1A) - Fig. 11 C: *Euscelis hihelisto* n. sp.: (Loc.: see Fig. 2 A, B) - Fig. 12 C: *Euscelis hiartalba* n. sp.: (Loc.: see Fig. 3 A) - Fig. 13 C: *Euscelis gredincola* n. sp.: (Loc.: see Fig. 4 A, B) - Fig. 14 C: *Euscelis chamaespartii* n. sp.: (Loc.: see Fig. 5 A, B).

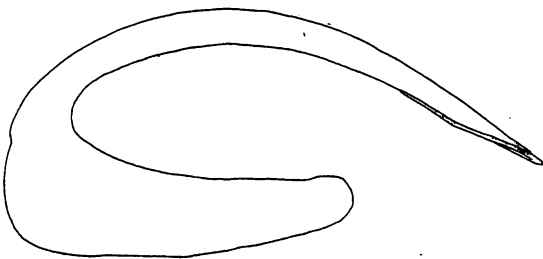




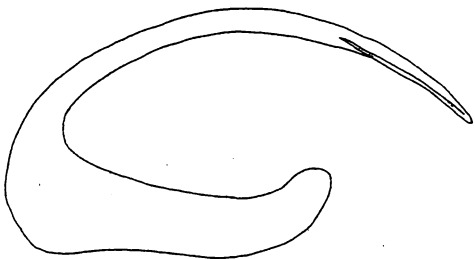
15 C



16 C



17 C



18 C

0.1 mm

Fig. 15 C: *Euscelis himargeni* n. sp.: (Loc.: see Fig. 6 A) - 16 C: *Euscelis ulicis* Ribaut: (Loc.: see Fig. 7 A, B) - 17 C: *Euscelis rifatmuli* n. sp.: (Loc.: see Fig. 8 A) - Fig. 18 C: *Euscelis matafalu* n. sp.: (Loc.: see Fig. 9 A).

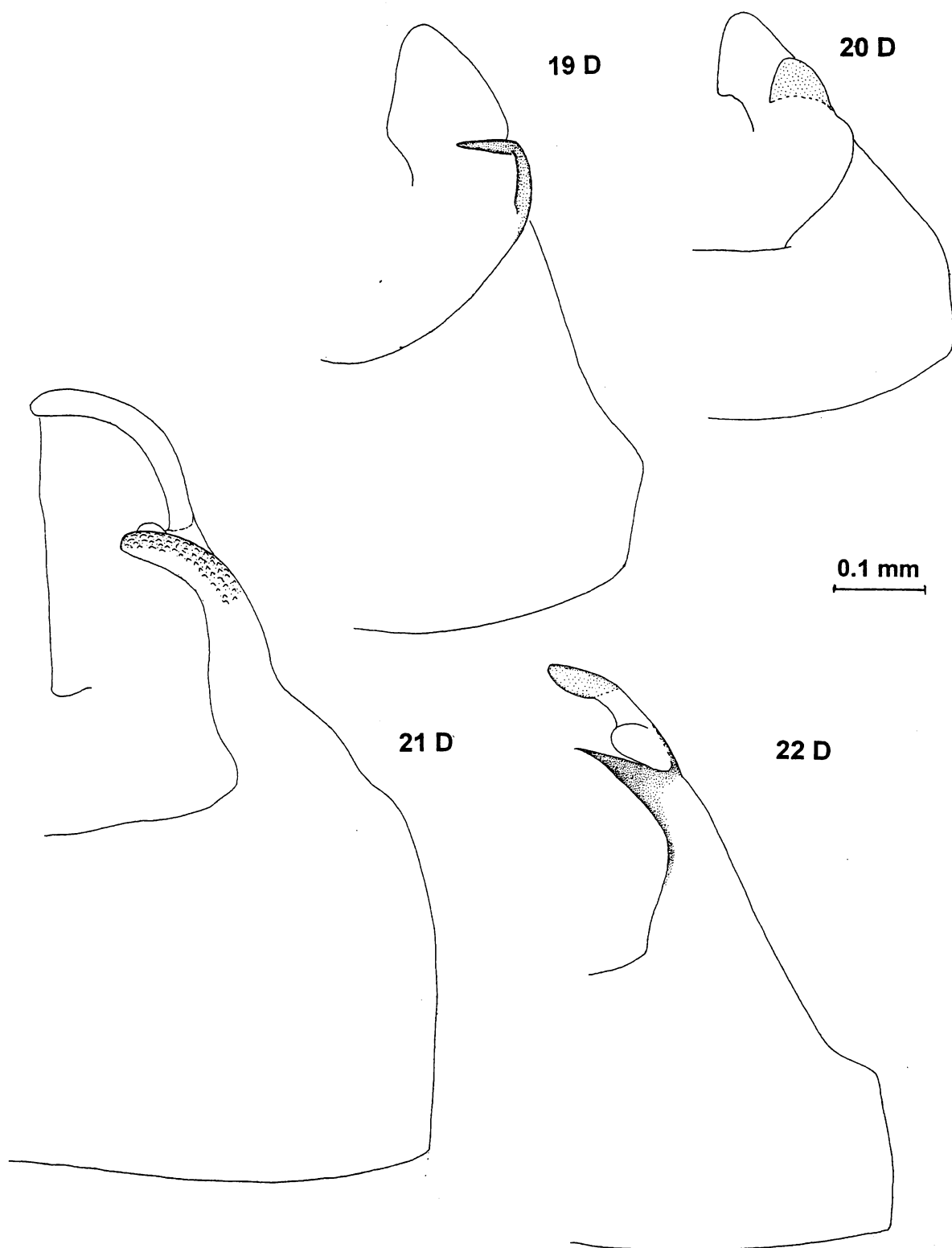


Fig. 19 D: *Euscelis corhelita* n. sp.: (Loc.: see Fig. 1 A) - 20 D: *Euscelis hiartalba* n. sp.: Spain: Prov. Murcia, Sierra de Almenara, Puerto de Purias, (Paratype) - 21 D: *Euscelis chamaespartii* n. sp.: (Loc.: see Fig. 5 A, B) - 22 D: *Euscelis himargeni* n. sp.: (Loc.: see Fig. 6 A).

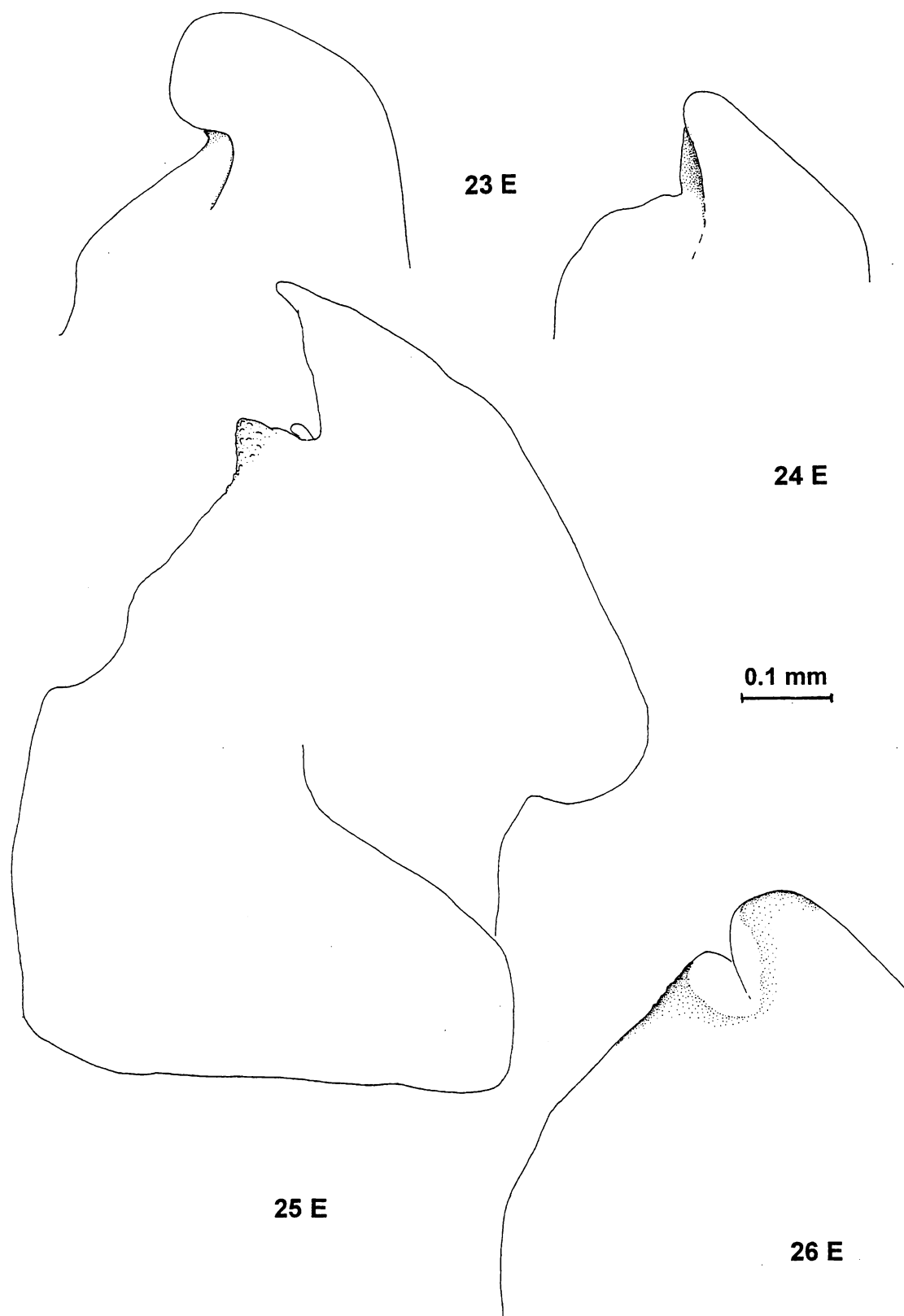


Fig. 23 E: *Euscelis corhelita* n. sp.: (Loc.: see Fig. 1 A) - 24 E: *Euscelis hiartalba* n.sp.: (Loc.: see Fig. 20 D) - 25 E: *Euscelis chamaespartii* n. sp.: (Loc.: see Fig. 5 A, B) - 26 E: *Euscelis himargeni* n. sp.: (Loc.: see Fig. 6 A).

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