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The genus *Dicranthus*
I. taxonomic revision, karyology and notes on the biology
(Coleoptera: Curculionidae)

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Abstract

Dicranthus MOTSCHULSKY is revised. Study of the types confirms that *Dicranthus vittatus* MOTSCHULSKY, 1845 is a junior synonym of *D. elegans* (FABRICIUS, 1801). *Dicranthus majzlani* sp. n. is described, differing from *D. elegans* in habitus and morphology of the wing and male and female genitalia. No differences in plastron morphology were found. In both species the diploid chromosome number is 20 A + XY (♂♂), 20 A + XX (♀♀). The species differ in the centromere position in several autosomal pairs and the X chromosome. *D. majzlani* sp.n. has been collected on *Glyceria maxima*. Geographic distributions of the species are given.

Key words: Curculionidae, *Dicranthus*, revision, new species, key, karyological analysis.

The genus *Dicranthus* is a small group of weevils (Curculionidae) adapted to life in water. Their hidden way of life and their inability to fly, (resulting in their restricted ability to spread) explain why they are rare in collections. Where they do occur they often live in large populations. For European waters there is now a question of where and to what extent this interesting animal will be able to survive.

Dicranthus was erected by MOTSCHULSKY (1845) for a new species, *D. vittatus*, described from specimens collected from reeds in the Kirghizian steppes. This species had been described earlier by FABRICIUS (1801) under the name *Lixus elegans*, the generic placement being because of its large size, the colour and the pointed elytral apices.

In 1990 we found a larger number of these beetles in eastern Slovakia in the waters of a tributary of the Latorica river near Leles. A comparison with *D. elegans* material from Germany and Holland revealed considerable morphological difference. To clarify the taxonomy we examined the type material of *D. elegans* and *D. vittatus*, and the accessible material deposited in various European museums and private collections. The acquisition of living specimens enabled us to do chromosome analysis.

Material and Methods

Living material used for chromosome analysis originated from the following localities:

D. elegans: GERMANY: Templin, Templiner See, viii.1990, leg.Behne, from *Phragmites australis* (CAV.) TRIN. ex STEUDEL

D. majzlani sp.n.: CZECHOSLOVAKIA: SLOVAKIA: Leles, vi.1990, leg.Kodada, Holecová, Behne, from *Glyceria maxima* (HARTM.) HOLMB.

Preserved material from various collections was examined: Natural History Museum, London (BMNH); Museum National d'Histoire Naturelle, Paris (MNHN); Zoological Institute of Academy of Sciences, St. Petersburg (ZIN); Zoological Museum of Moscow State University, Moscow (ZMM); National Museum Prague (NMP); Slovak National Museum, Bratislava

(SNM); Natural History Museum, Vienna (NHMV); Természettudományi Múzeum Állattára, Budapest (TMAB); Zoological Museum Copenhagen, (ZMC); Museum of Natural History Wroclaw (MNHW); Zoological Museum Warsaw (ZMW); Zoological Museum of Polish Academy of Sciences, Krakov (ZMPAK); Deutsches Entomologisches Institut, Eberswalde (DEIE); Museo Civico di Zoologia, Roma (MCZ); Museo Civico di Storia Naturale Milano, (MCDSN); coll. Osella L'Aquila, (COA); coll. Strejček, Prague, (CSP); coll. Borovec, Nechanice; coll. Voříšek, Kladno; coll. Suppantschitsch, Vienna.

Gonads of living specimens (*D. elegans* 1 ♂ and 2 ♀♀; *D. majzlani* sp.n. 10 ♂♂ and 1 ♀) were dissected and chromosomes were prepared by the cell suspension and air drying technique as described by IMAI et al. (1977) and modified by ROŽEK (1983, 1988) for Coleoptera.

The number and structure of the chromosomes were examined using unmounted slides, directly under immersion oil. Well-spread spermatogonial metaphases were analyzed and photographed for further karyotype construction.

The centromere position was expressed as the long to short arm length ratio and referred to according to the nomenclature proposed by LEVAN et al. (1964).

The slides and specimens studied are kept in the Department of Zoology, Faculty of Natural Sciences, Comenius University, Bratislava.

All photographs of different body parts were taken with the aid of a Tesla 340 scanning electron microscope at an accelerating voltage of 20, 25 and 30 kV. The parts to be photographed were cleaned in an ultrasonic cleaner, mounted on stubs with conductive silver paint, and coated with gold.

Genus Dicranthus MOTSCHULSKY

Dicranthus MOTSCHULSKY, 1845: 102. Type species: *Dicranthus vittatus* MOTSCHULSKY (by monotypy)
Anactodes BRISOUT, 1863: 107. Type species: *Dicranthus elegans* FABRICIUS (by monotypy)

Body narrow cylindrical. Rostrum long and thin, nearly straight, slightly longer than the pronotum.

Antennae slender, scape and flagellum subequal in length; segment 2 of the funiculus very long (compare with other segments); funiculus 7-segmented, segment 7 very broad and intimately associated with club. Eyes flat; frons with a longitudinal median depression. Head and body covered with a plastron formed by scale-like setae and bunch-formed setae (Fig. 9), (MESSNER & DIECKMANN 1987).

Pronotum constricted behind head, then abruptly widened with nearly parallel sides posteriorly, Prosternum with a groove to receive the rostrum, scutellum small, covered with bunch-formed setae.

Elytra with humeri weakly developed, sides subparallel in basal-two thirds, emarginate in distal third to strongly developed acuminate apical projections, interstice 5 with strong projection 2/3 of length along elytron (the size and shape of these projections are variable in local populations, also asymmetrical specimens occur); striae finely punctate; odd interstices strongly arched; all interstices with rows of setae.

Hind wings short, lacking a distinct anal cell and a spur on the crossveins.

Pro-, meso- and metasternum covered with a plastron; mesosternal intercoxal process short, the disc of the posterior part of the metasternum with a depression. The anterior intercoxal process of 1st ventrite sometimes terminated by a spine. At the end of the ventrite 5 are two groups of sensilla, laterally placed.

Legs long and thin, covered with a plastron. The inner side of the tibiae with some granules with

setae arising from them, apex with curved uncus, tarsi long and thin with 5 segments. Tarsal claws thin and long.

Male genitalia: aedeagus consisting of a ventrally curved chitinous tube flattened towards the end with a dorsally placed eversible endophallus (its sclerotized structures have a stable form). Tegmen ring-shaped with a single basal apodeme without parameroid lobes.

Female genitalia: ovipositor with coxites, a long vagina and short styli, completed by a sternum VIII with apodeme. The spermatheca is horn-shaped with an accessory gland (the form and curvature of the spermatheca are quite constant).

Dicranthus elegans (FABRICIUS)
(Figs. 1 - 2, 4 - 8, 14 - 17, 21 - 25, 33 - 36, 39)

Lixus elegans FABRICIUS, 1801: 499. Holotype ♀. GERMANIA. Type material: no locality data (ZMC), examined.
Dicranthus vittatus MOTSCHULSKY, 1845: 102. Lectotype ♀. STEPPE OF KIRGHIZIA. (ZMM), here designated (examined).
Bagous elegans FABRICIUS, SCHÖNHERR, 1845: 74.
Anactodes elegans FABRICIUS, BRISOUT, 1863: 497.
Hydronomus elegans FABRICIUS, BEDEL, 1884: 104.

The Motschulsky collection (ZNM) contains two female syntypes of *D. vittatus* labelled as follows: 1st label - number 103, 2nd label - illegible, 3rd label - Dicranthus Brachypus ? Sek. vittatus Des. Kirg. m. One is herewith designated as lectotype. The lectotype confirms the present interpretation of *D. elegans*. It is 7.63 mm long and 2.22 mm broad. Elytral apices slightly asymmetrically developed.

Habitus (Figs. 1, 2): Length of body without rostrum: 4.5 - 7.5 mm ($\bar{x}$ = 6.2 ± 0.69 mm) n = 42 ♂♂; 4.5 - 8.9 mm ($\bar{x}$ = 7.29 ± 0.83 mm) n = 56 ♀♀.

Colour: The major part of both the dorsal and ventral surface is covered with yellow-greyish scales. Pronotum with two (seldom four, in French and CIS material), longitudinal dark brown or black spots (Figs. 1, 2); elytra with interstices 2, 4 and 6 dark from base to apex.

Head: ratio of rostrum length : pronotum length = ♂♂ 1.03 ± 0.17, ♀♀ 1.14 ± 0.09. Antennal insertion approximately 1/3 length from base (0.33 ± 0.03) of the rostrum in both sexes.

Thorax: pronotum slightly longer than broad or quadrate (some specimens from the CIS), length 1.49 ± 0.16 mm (♂♂), 1.72 ± 0.20 mm (♀♀), greatest width 1.38 ± 0.16 mm (♂♂), 1.63 ± 0.18mm (♀♀). Scutellum small (Fig. 5) sometimes triangular.

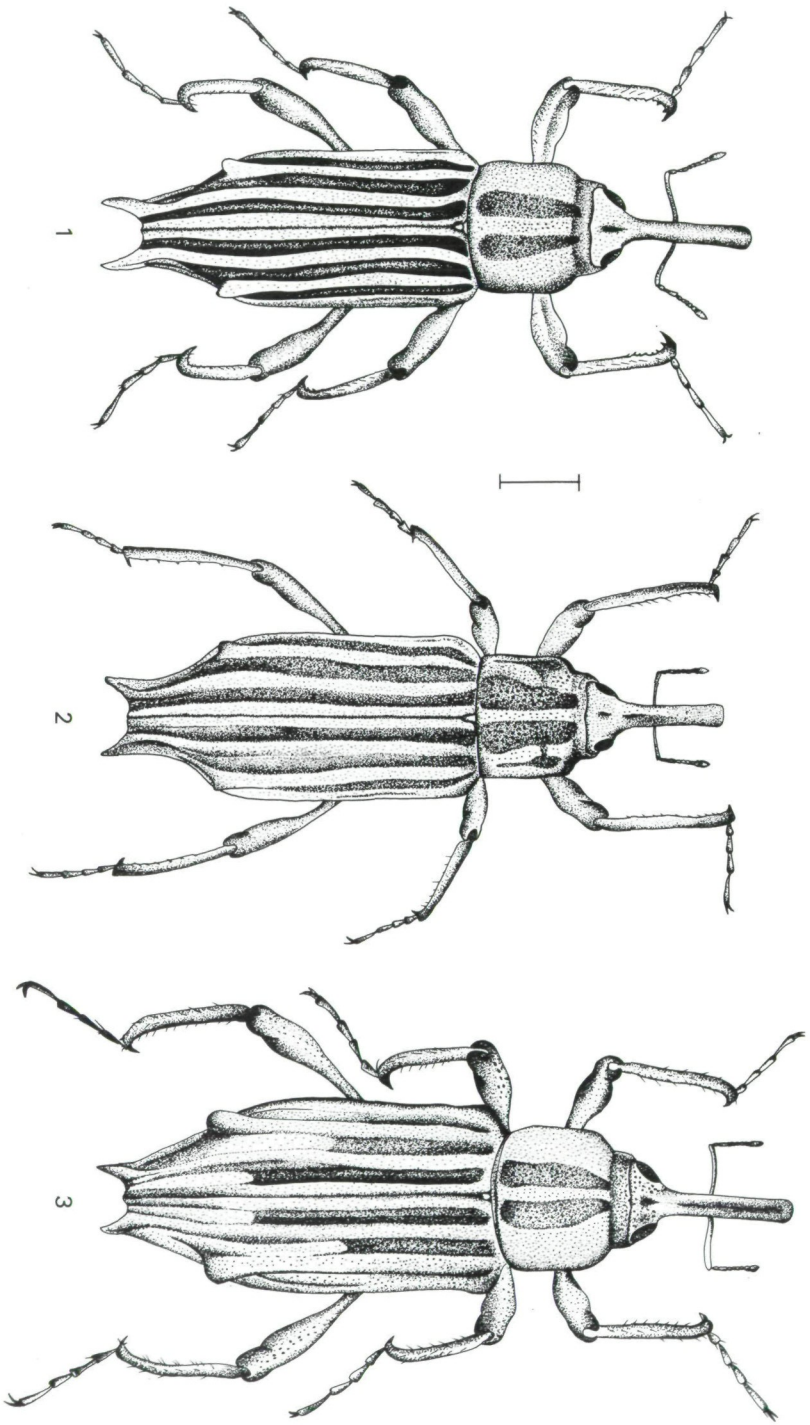
Elytra: elytral width across humeri 2.5 - 2.6 x length; apical acuminate projection (Fig. 8) length 0.44 ± 0.07 mm (♂♂), 0.48 ± 0.06 mm (♀♀). The distance between the projection of the right and left elytra 0.88 ± 0.10 mm (♂♂), 0.95 ± 0.11 mm (♀♀).

Wings short; apex variably emarginate (Figs. 33 a-d); part of medial vein sometimes present (Fig. 34); end of broadened part of cu-vein with group of 2-6 sensilla between microtrichia placed nearly in a row (Figs. 35 a-d), one of them being usually shifted laterally. The number of sensilla varies also in local populations.

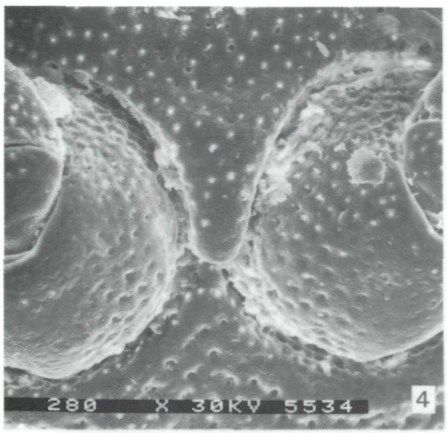
Mesosternal intercoxal process (Fig. 4) short, the disc of the posterior part of the metasternum with a longitudinal depression (Fig. 6).

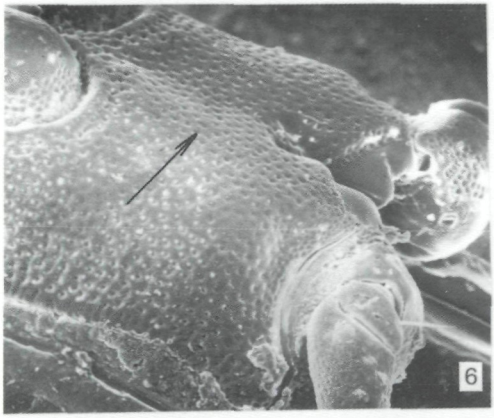
Abdomen: anterior intercoxal process of 1st ventrite sometimes terminated by a spine of variable size (Fig. 7).

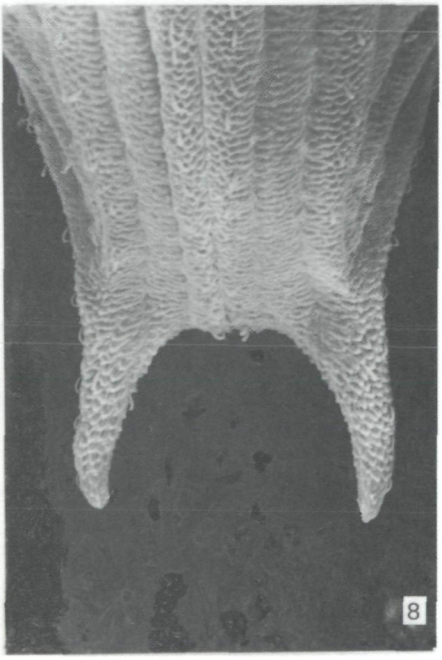
Male genitalia: dorsally placed eversible endophallus as in Figs. 14, 36. The tegmen as in Fig. 17. The apex of the aedeagus is variable (even in local populations), especially in specimens from the CIS (Figs. 15, 16). (Because of their variability other parts are not suitable for determination).

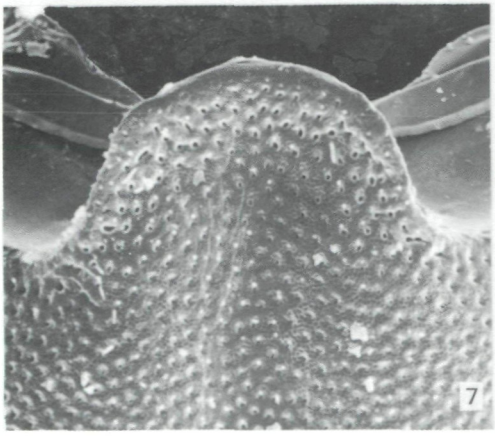


Figs 1 - 3: *Dicranthus*, habitus: (1) *D. elegans* ♂♂; specimen from Templin; (2) specimen from Aral Sea env.; (3) *D. majzlani* sp.n. ♂, paratype from Leles. - Scale bar represents 1.0 mm.

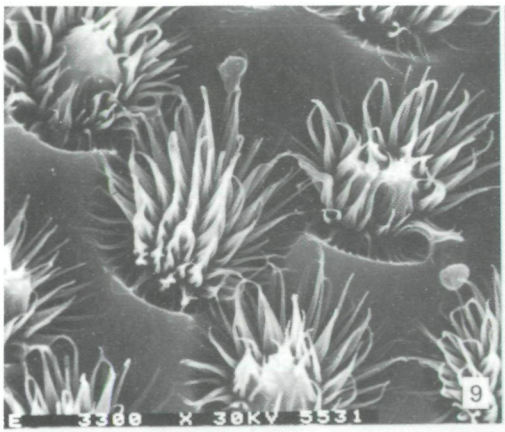


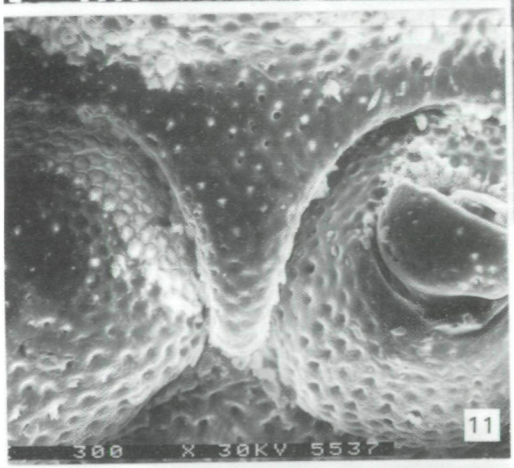


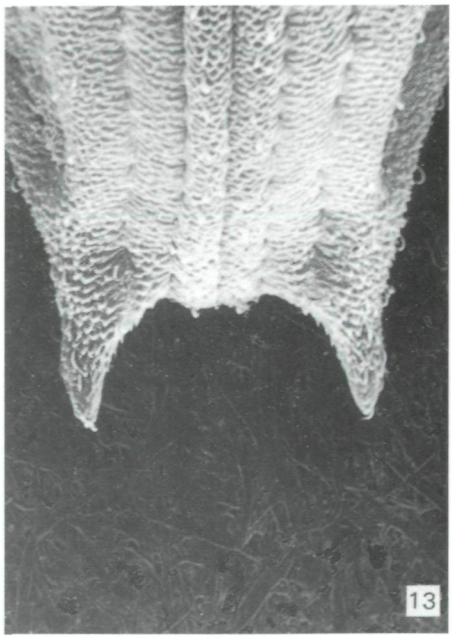


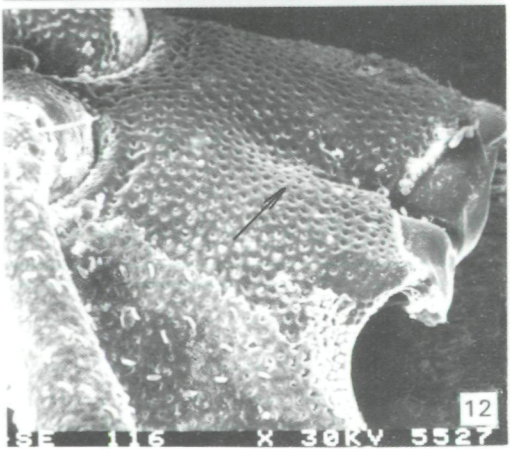


Figs 4 - 8: *Dicranthus elegans* from Templin; (4) mesosternal intercoxal processus; (5) scutellum; (6) metasternum with a depression (see arrow); (7) anterior intercoxal processus of 1st ventrite; (8) elytral acuminate projections.

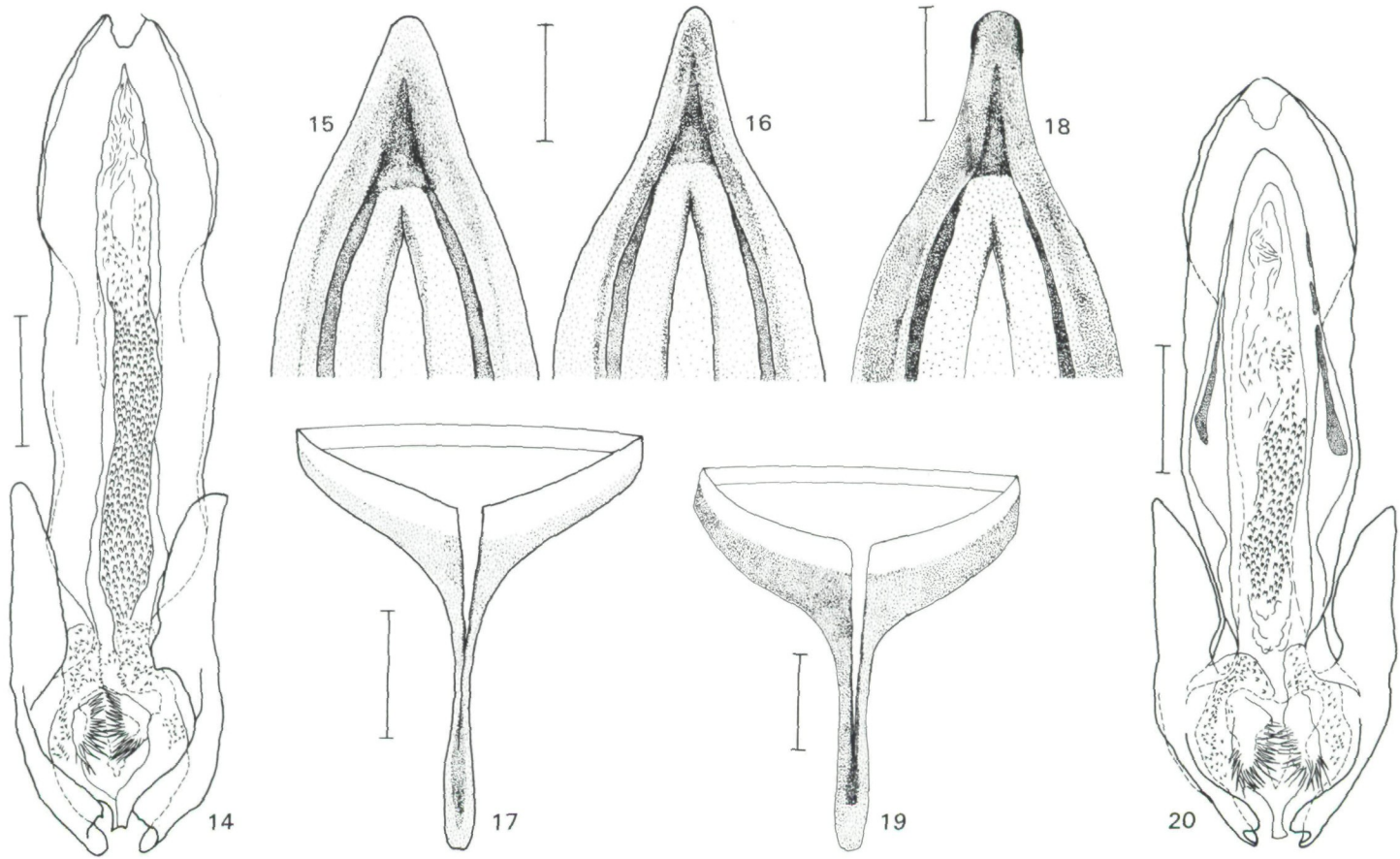




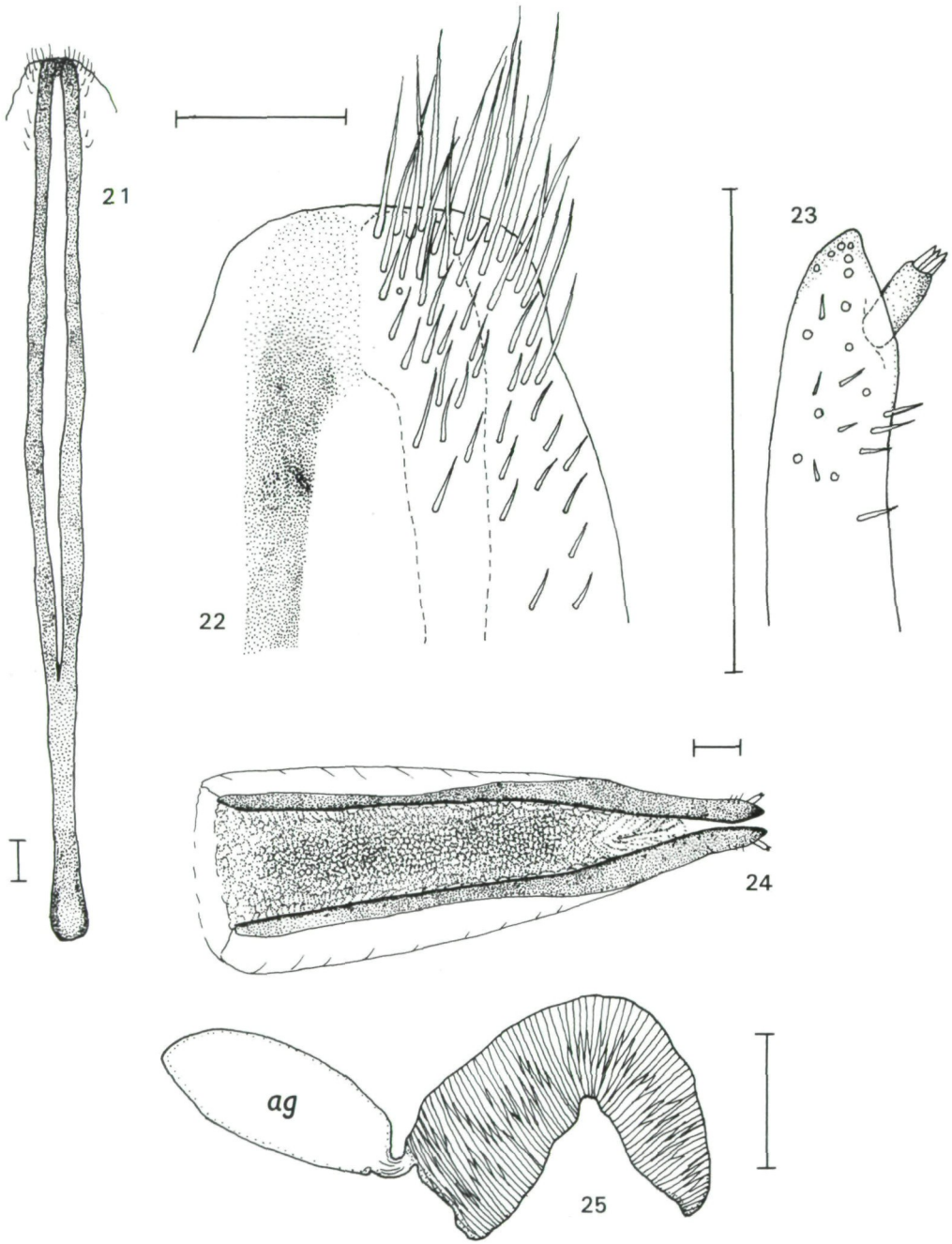




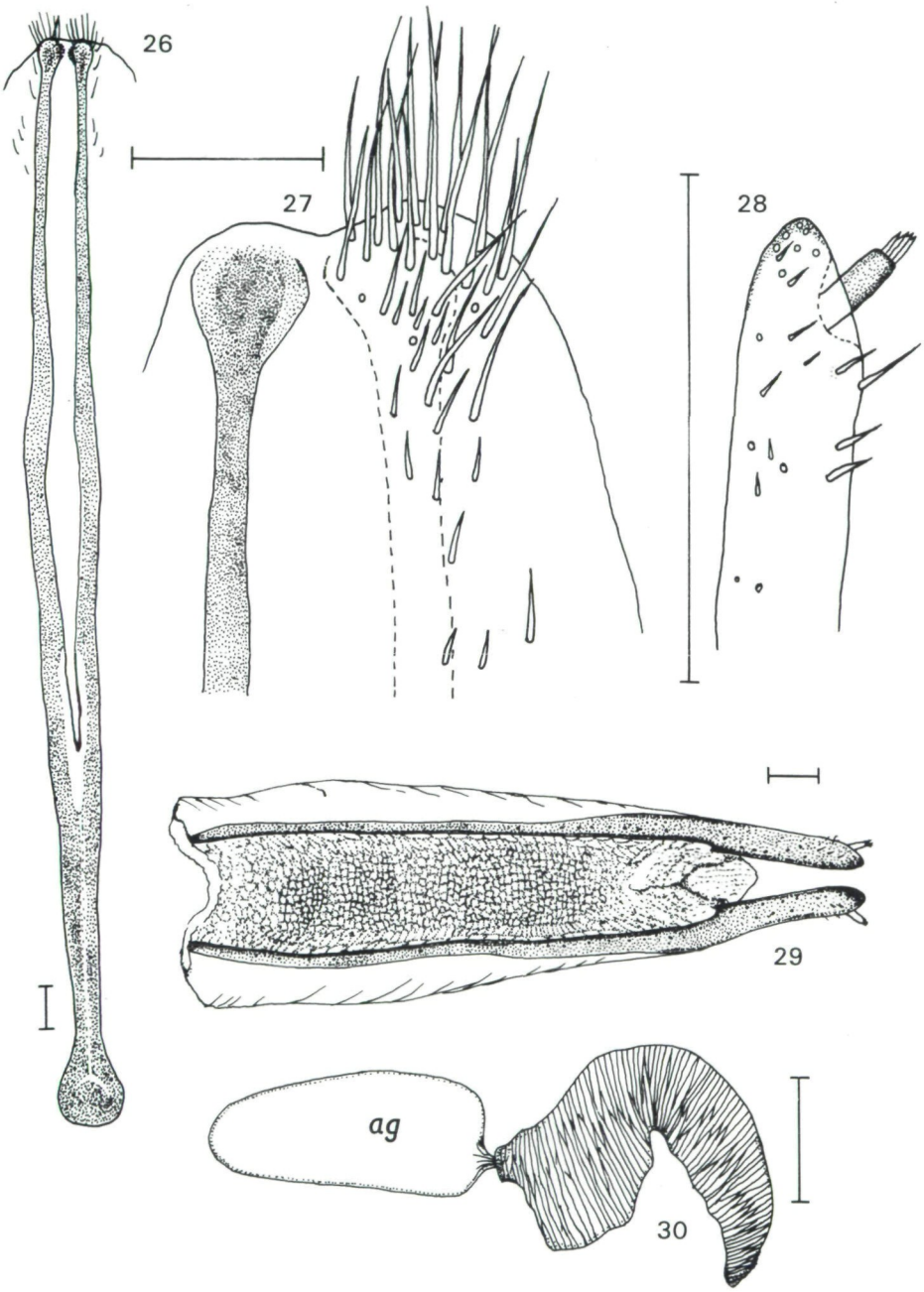
Figs 9 - 13: *Dicranthus majzlani* sp.n., paratype from Leles: (9) bunch formed seta (dorsal part of the head); (10) scutellum; (11) mesosternal intercoxal processus; (12) metasternum with depression (see arrow); (13) elytral apical projections.



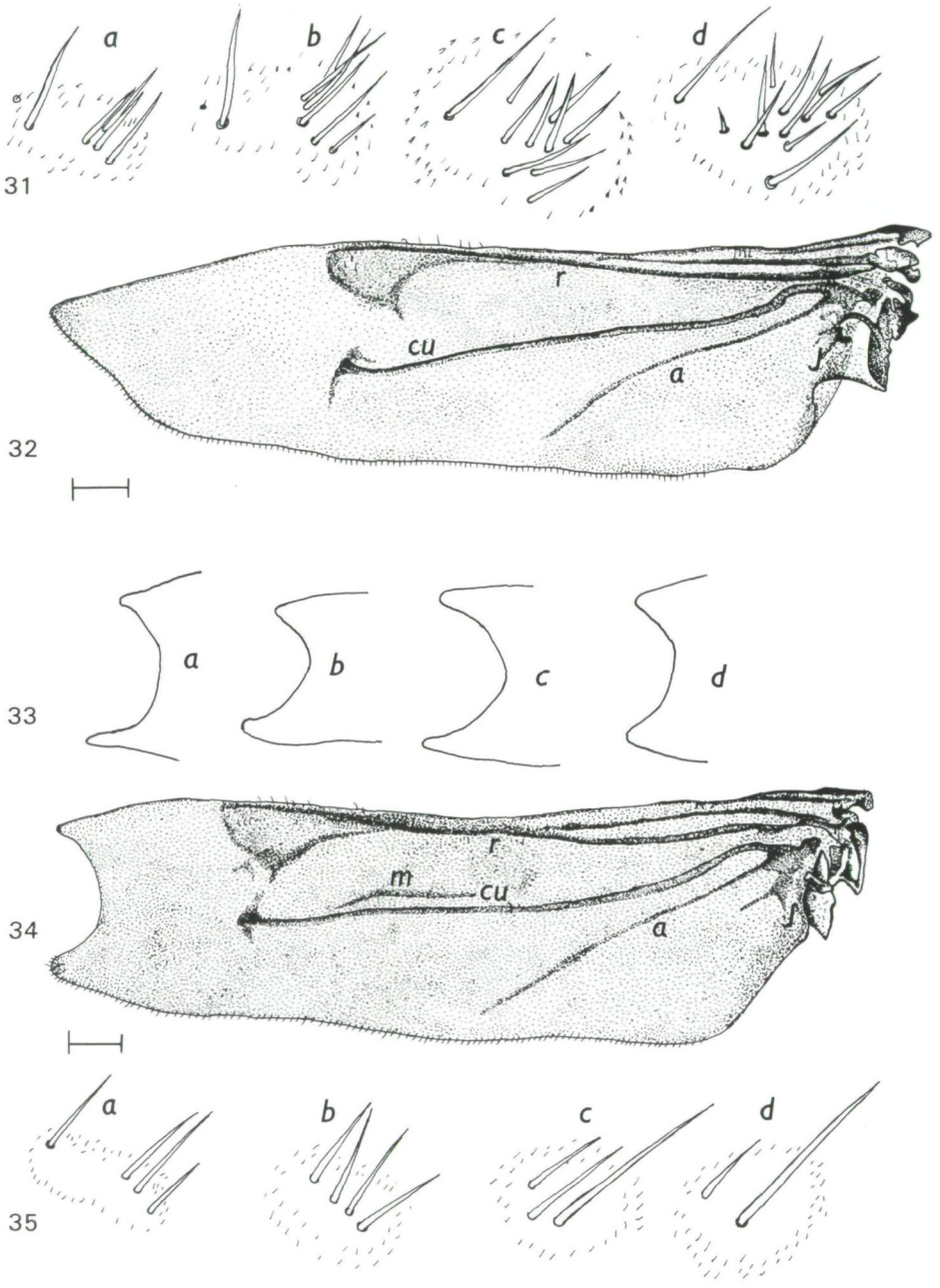
Figs 14 - 20: *Dicranthus*, male genitalia: (14 - 17) *D. elegans*, (14) endophallus, dorsal aspect; (15) apex of aedeagus, specimen from Templin; (16) apex of aedeagus, specimen from Aral Sea env.; (17) tegmen; (18 - 20) *D. majzlani*, (18) apex of aedeagus; (19) tegmen; (20) endophallus, dorsal aspect. Scale bar represents 0.1 mm.



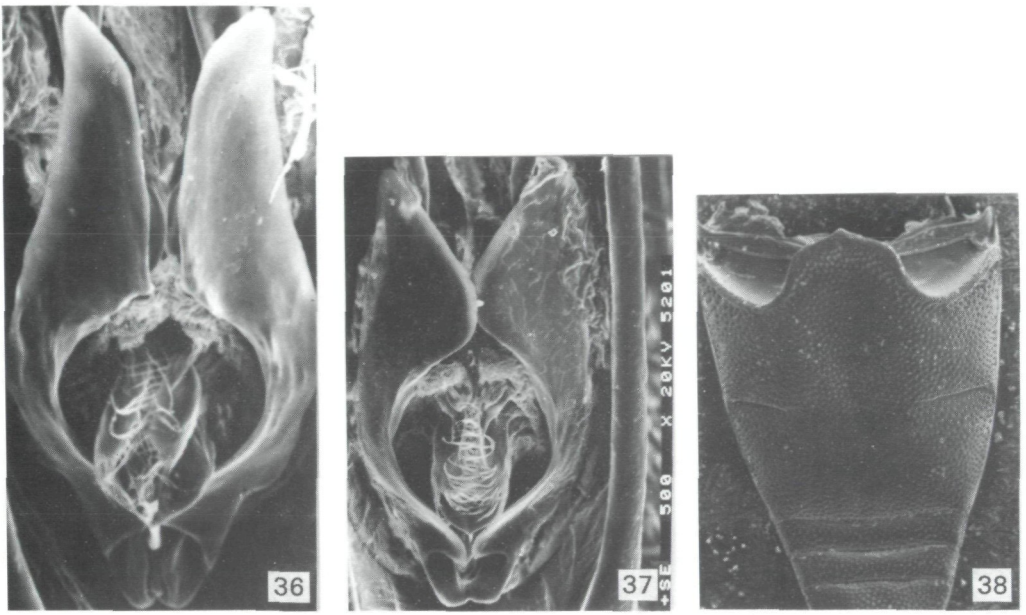
Figs 21 - 25: *Dicranthus elegans* from Templin, female genitalia; (21) sternum VIII with apodeme; (22) apex of sternum VIII (sensilla on the left part not drawn); (23) apex of right coxite; (24) distal part of the ovipositor; (25) spermatheca with accessory gland (ag). Scale bar represents 0.1 mm.



Figs 26 - 30. *Dicranthus majzlani* sp.n., ♀ paratype from Leles; (26), sternum VIII with apodeme, (27) apex of sternum VIII;(28) apex of coxite; (29) distal part of ovipositor; (30) spermatheca with accessory gland (ag). Scale bar represents 0.1 mm.



Figs 31 - 35: *Dicranthus*, hind wing; (31 - 32) *D. majzlani* sp.n.; (31) group of sensilla on the cu-vein end; (a) specimen from Breslau; (b-c) Leles; (d) Kalocsa; (32) right wing. (33 - 35) *D. elegans*; (33) apex of right wing; (a) specimen from Denmark; (b-c) Holland; (d) Templin; (34) right wing, specimen from Holland; (35) group of sensilla on the cu-vein end; (a) specimen from Holland; (b-d) Templin. Scale bar represents 0.1 mm.



Figs 36 - 37: Aedeagus, basal part of endophallus, external dorsal aspect; (36) *D. elegans*; (37) *D. majzlani* sp.n.; paratype from Leles.
Fig. 38: *D. majzlani* sp.n., part of abdomen, paratype from Leles.

Female genitalia: the vagina, coxites and styli as in Figs. 23, 24, sternum VIII (Fig. 21) with a membrane with a variable number of sensilla (Fig. 22). The spermatheca with an accessory gland as in Fig. 25.

Distribution (on the basis of the material we have examined):
FRANCE: Bruleau, Lac de Grandlieu, Noirmoutiers.
HOLLAND: Nieuwkoop (eastern from Alphen an der Rijn), Alsmer env., Schelluinen.
DENMARK (Sjaeland): Skarritsϕ, Susså at Naestved, Sorϕ.
GERMANY: Schleswig-Holstein, Mecklenburg (Rostock), Prussia, Mark Brandenburg (Templin, Templiner See and Fährsee), Berlin, Frankfurt an der Oder.
POLAND: Pomerania; Żegrze, Pomiechówek pod Warszawa, Polesie.
HUNGARY: Budapest.
ROMANIA: Dunavatz (Danube delta).
CIS: Russia (Lake Malabskoe near Pskov, Choperskij nature reserve near Borisoglebsk), Kazakhstan (Pavlodar distr. Lake Lebedinyj),Tadzhikistan, Kirghizia.

Biology: BRAUNS (1891) and POOT (1972) state that the species is monophagous on the reed *Phragmites australis*. Adults spend a considerable part of their life under water. Larvae develop in the internodes of the stalk below water level, with no more than one larva in each internode. Eggs are laid from about the middle of May until the middle of July (DIECKMANN 1983). Development is quite rapid, and from the beginning of August it is possible to find pupae and newly emerged imagines. The beetles emerge by biting a round hole in the wall of the stalk between the nodes and crawling into the water. According to BRAUNS (1891) the beetles copulate before overwintering on the shore. A further copulation after hibernation as in *D. majzlani* sp.n. (see below) is probable. According to DIECKMANN (1983) the size of the beetle depends on the thickness of the stalk, (stalks that are too thick are not inhabitated).

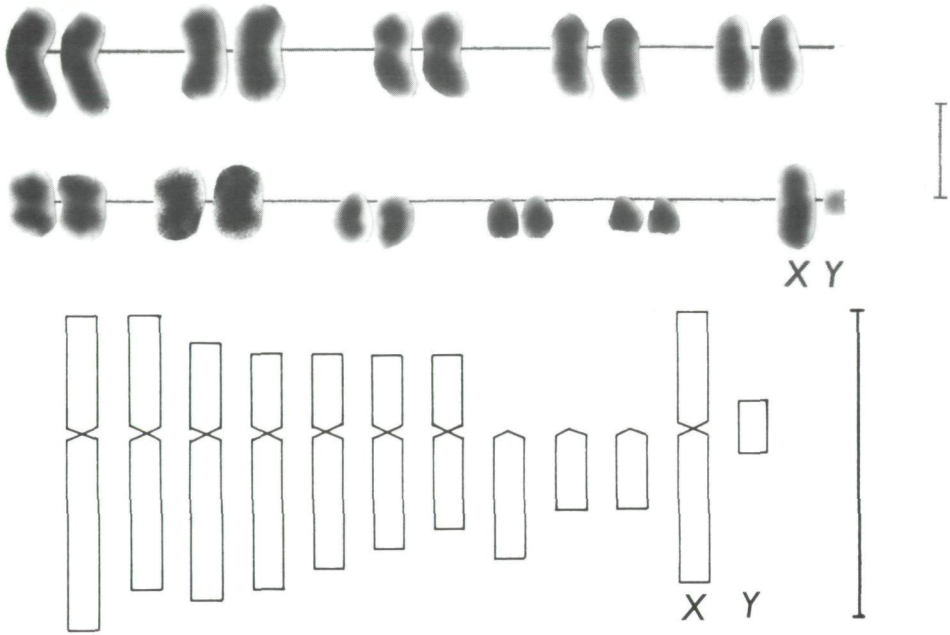


Fig. 39: Karyotype of *Dicranthus elegans* ♂. Scale bar represents 5 μm.

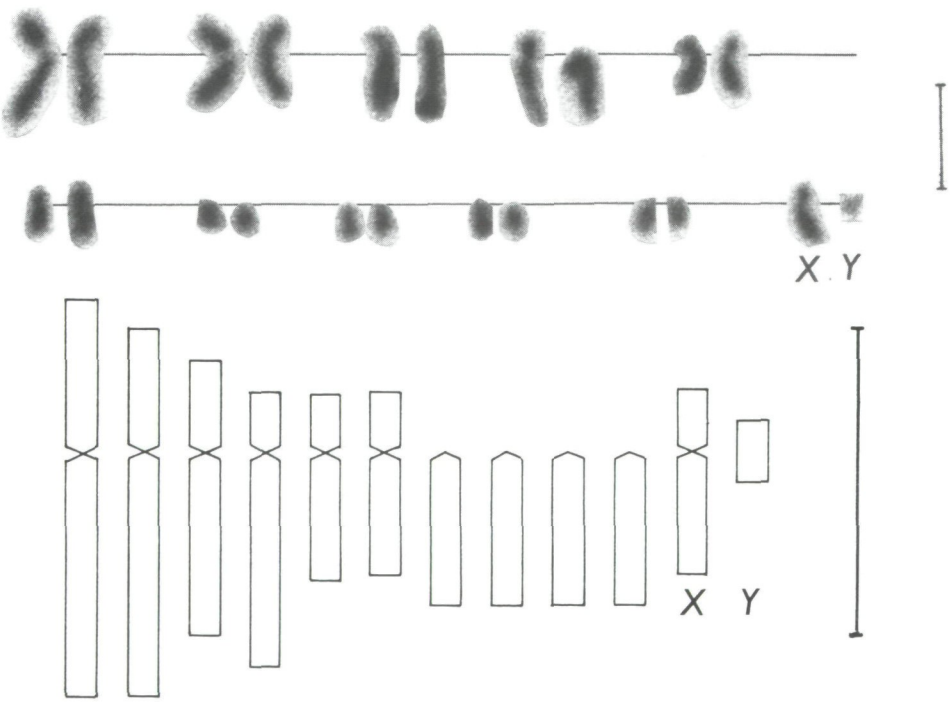


Fig. 40: Karyotype of *Dicranthus majzlani* sp.n. ♂. Scale bar represents 5 μm.

CHROMOSOME	RL %	AR	CI %	
2	11.96	1.33	42.85	metacentric
3	11.53	1.54	40.74	metacentric
4	10.25	2.00	33.33	submetacentric
5	9.40	1.75	36.36	submetacentric
6	8.54	1.50	40.00	metacentric
7	7.69	1.25	44.44	metacentric
8	5.55	-	-	acrocentric
9	3.41	-	-	acrocentric
10	3.41	-	-	acrocentric
X	11.96	1.33	42.85	metacentric
Y	2.56	-	-	dot - shaped

Table 1: Karyometric analysis of the relative lengths (RL), arm ratio (AR) and centromeric index (CI) in *Dicranthus elegans*.

CHROMOSOME	RL %	AR	CI %	
1	15.85	1.60	38.46	metacentric
2	12.19	1.50	40.00	metacentric
3	10.97	2.00	33.33	submetacentric
4	10.97	3.50	22.22	subtelocentric
5	7.31	2.33	30.00	submetacentric
6	7.31	2.00	33.33	submetacentric
7	6.09	-	-	acrocentric
8	6.09	-	-	acrocentric
9	6.09	-	-	acrocentric
10	6.09	-	-	acrocentric
X	7.31	2.00	33.33	submetacentric
Y	3.65	-	-	dot-shaped

Table 2: Karyometric analysis of the relative lengths (RL), arm ratio (AR) and centromeric index (CI) in *Dicranthus majzlani* sp.n.

Dicranthus majzlani sp. n.
(Figs. 3, 9 - 13, 18 - 20, 26 - 32, 37, 38, 40)

Habitus: (Fig. 3): Length of body without rostrum: 4.20 - 8.40 mm ($\bar{x}$ = 5.94 ± 0.60 mm) n = 104 ♂♂, 5.40 - 9.70 mm ($\bar{x}$ = 7.44 ± 0.74 mm) n = 75 ♀♀.

Colour: dorsal and ventral surface covered with yellow-greyish scales, pronotum with two broad elongated dark brown or black spots (Fig. 3), the 2nd and 4th interstices on elytra dark, the 2nd one from base to the end of the second third, the 4th one to the half length of elytra. The surface is often dirty and covered by secretions.

Head: rostrum long and narrow, nearly straight, slightly longer than the pronotum; ratio of rostrum length : pronotum length = 1.14 ± 0.13 (♂♂), 1.32 ± 0.10 (♀♀). It is on average longer and narrower in females; length 1.80 - 2.70 mm ($\bar{x}$ = 2.19 ± 0.22 mm) (♀♀), 1.0 - 2.0 mm ($\bar{x}$ = 1.64 ± 0.19 mm) (♂♂). Antennal insertion between 1/3 and 1/4 length from base of the rostrum (that means nearer to the head than in *D. elegans*). In ♂♂ the insertions are 0.28 ± 0.02 of the length from base, in ♀♀ 0.27 ± 0.03.

Thorax: the pronotum is shorter than wide, and becomes slightly narrower towards the base. Pronotal length : 1.44 ± 0.13 mm (♂♂), 1.78 ± 0.18 mm (♀♀), greatest width 1.55 ± 0.13 mm (♂♂), 1.92 ± 0.18 mm (♀♀). Scutellum small and rounded, (Fig. 10).

Elytra: with nearly parallel sides; elytral width across humeri 2,3 x length; (2.31 ± 0.16 ♂♂, 2.33 ± 0.16 ♀♀). Apical acuminate projection (Fig. 13) length 0.21 ± 0.04 mm (♂♂), 0.26 ± 0.05 mm (♀♀). The distance between apical projection of the right and left elytra 0.66 ± 0.09 mm (♂♂), 0.77 ± 0.09 mm (♀♀).

Wings: with a shortened apical part (Fig. 32), slightly coloured, no residue of the m-vein has been found. On the end of the broadened part of the cu-vein between microtrichia is a group of 4-11 sensilla (Figs. 31 a-d), which are not in a row, with a laterally shifted sensillum. The number of sensilla is variable, even in local populations.

The mesosternal intercoxal process (Fig. 11) is longer and narrower than in *D. elegans*. The disc of posterior part of metasternum has a broad depression (Fig. 12).

Abdomen: five ventrites, the first one is the longest, the anterior intercoxal process is terminated by a spine (Fig. 38).

Male genitalia: eversible endophallus placed dorsally as in Figs. 20, 37. Also belonging to the stable structures is a ring-shaped tegmen (Fig. 19) and the apex of the aedeagus (Fig. 18).

Female genitalia: the female ovipositor as in Figs. 28, 29, sternum VIII with apodeme as in Fig. 26, its apex with variable number of setae (Fig. 27). The horn-shaped spermatheca (Fig. 30) can be used for the identification of the species.

Type data. Holotype, ♂, CZECHO-SLOVAKIA: southeastern Slovakia, Leles, tributary of the river Latorica, 20. vi. 1990 (Kodada, Holecová, Behne) (SNM).

Allotype, ♀, the same data as holotype (SNM).

Paratypes, 35 ♂♂, 19 ♀♀, the same data as holotype (authors collections), 1 ♀, Leles, 28. v.1989 (Kodada) (SNM), 125 unsexed specimens, Leles env., 12.-13. viii. 1991 (Kodada, Holecová); 5 unsexed specimens, Devínske jazero env., 19.-28. iv. 1991 (Kodada) (in various museal and private collections); 1 ♂, South Moravia, Lednice env., Drnholec, 6. v. 1964 (Smetana) (CSP); HOLLAND: 1 ♀, Alsmer, v. 1939 (van Vahen) coll. Tempère (MNHN); GERMANY: 1 ♂, 1 ♀, Hamburg env., Kühwärder, 15. iv. 1895, 19. v. 1895 coll. Koltze (DEIE); 1 ♂, 1 ♀, Hamburg env., Wilhelmburg, v. 1877, 29. v. 1882 coll. Koltze (DEIE); 1 ♂, Hamburg, (Johns) coll. Tempère (MNHN); 1 ♀, Mecklenburg, Rostock, (Schilsky) coll. Champion (BMNH); 1 ♀, Magdeburg, Goldfuss, (DEIE); 1 ♂, 1 ♀, Magdeburg, Breddin, 1888 (NHMV); POLAND: 12 ♂♂, 6 ♀♀, Silesia, Breslau, (Letzner) (DEIE); 2 ♂♂, 1♀, Breslau, coll. Rottenberg (DEIE); 1 ♂, 1♀, Breslau, (Letzner) coll. Eppelsheim (NHMV); 1 ♂, 1 ♀, Breslau, (Reitter) (MHNV); 4 ♂♂, Breslau, (NHMW); 1 ♀, Breslau, (Letzner) coll. Tempere (MNHN); 1 ♂, Liuwlin, 1912, coll. Oberthur (MNHN); 2 ♂♂, 2 ♀♀, Warszawa, (Maczynski) coll. Demarson (MNHN); 1 ♂, Warszawa,

(Lgotski) coll. Hustache (MNHN); 1 ♂, Warszawa, (Marzynski) (ZIN); 1 ♂, Szostaki, distr. near Biebrza, 22. vi. 1977 (Borowiec) coll. Wanat (NHMW); 1 ♀, Czarna Struga, coll. S. Tenenbaum (ZMW); 1 ♀, Saska Kepa, 3. vi. 1903, coll. S. Tenenbaum (ZMW); 2 ♂♂, 1 ♀, Saska Kepa, coll. Smreczynski (ZMPAK); 1 ♀, Breslau, 1904 (Dietl) (ZMW); 1 ♀, Breslau, 1905 (Dietl) (ZMW); 1 ♀, Warszaw, coll. F. Kessel (ZMW); HUNGARY: 1 ♂, Kovácsháza, coll. Kuthy (TMAB); 1 ♂, 1 ♀, Budapest env., Ocsa, coll. Diener (TMAB); Magyaróvár, 1 ♀, 28. iv. 1939, 1 ♂, 30. iv. 1941, 1 ♀, 4. v. 1944, 1 ♂, 14. v. 1944 (Révy) coll. Révy (TMAB); 1 ♂, 2 ♀♀, Puszta, Babád, (Pável) (TMAB); 1 ♂, 1 ♀, Kalocsa, 4. iii. 1936 (Erdõs) coll. Erdõs (TMAB), 3 ♂♂, Kalocsa (Speiser) (TMAB), 2 ♂♂, Kalocsa, (Speiser) (SNM); 2 ♂♂, 2 ♀♀, Kalocsa, (Speiser) coll. Eppelsheim (MNHV); 1 ♀, Kalocsa, coll. Hoffmann (MNHN); 1 ♂, Vastus Apaj, coll. Mihók (TMAB); ROMANIA: 3 ♂♂, 2 ♀♀, Sulino, v. 1902 (Cameron) (BMNH); ITALY: 1 ♂, Romagna, Ravenna, iv. 1964 (Callegan) (COA); 1 ♂, S. Alberto, 12. v. 1946 (Zangheri) coll. Solari (MCDSN); 1 ♀, Marina, 23.v.1963, coll. Pesarini (MCDSN); CIS: 1 ♂, South Russia, Sarepta, coll.Stierlin (DEIE).

The rest of the examined specimens have not been designated as paratypes because of incomplete locality data. They are deposited in the institutions mentioned above. Worthy of attention is a female labelled: LAPONIA (Reitter) (MCZ) which represents the northernmost occurrence of this species.

Derivatio nominis: the species has been named in honor of our friend Dr. O. Majzlan, to whom this study is dedicated.

Biology: we collected the specimens on large growths of *Glyceria maxima* in a tributary of the river Latorica. In 1989 we observed copulation under water on submerged stalks of the host plant. In 1990 the locality was dry and we collected hibernating specimens by sieving in moister parts of the growth. We suppose a similar development as in *D. elegans* but on *Glyceria maxima*. But it is not known whether it is monophagous.

Key to the species of the genus *Dicranthus*

1 The 2nd, 4th and 6th interstriae of elytra dark from base to apex (Figs. 1, 2), acuminate projections of the elytra long (0.44 ± 0.07 mm ♂♂, 0.48 ± 0.06 mm ♀♀). Elytra 2.5 - 2.6 times longer than wide, pronotum slightly longer than broad, antennae inserted at about 1/3 length of rostrum from base. Distal part of the endophallus lobes long and narrow (Figs. 14, 36), ring shaped tegmen with a long apodeme (Fig. 17), spermatheca (Fig. 25), wings with apical emargination (Fig.34)..... *D. elegans*

2 The 2nd and 4th interstriae of elytra not dark from base to apex (Fig. 3), acuminate projections of the elytra shorter (0.21 ± 0.04 mm ♂♂, 0.26 ± 0.06 mm ♀♀). Elytra on average 2.3 times longer than wide, pronotum somewhat shorter than broad, antennae inserted between 1/3 and 1/4 length of rostrum from base. Distal part of the endophallus lobes short and broad (Figs. 20, 37), tegmen with a shorter apodeme (Fig. 19), spermatheca (Fig. 30), wings without emargination (Fig. 32)..... *D. majzlani* sp.n.

Karyological analysis

In both species the diploid chromosome number is 20 A + XY (♂♂), 20 A + XX (♀♀).

Dicranthus elegans

The chromosome morphology has been observed at spermatogonial metaphase. The karyotype (Fig. 39, Tab. 1) consisted of three pairs of submetacentric (pairs 1, 4, 5), four pairs of metacentric (pairs 2, 3, 6, 7), three pairs of acrocentric (pairs 8, 9, 10) autosomes, together with the metacentric X chromosome and the dot-shaped Y-chromosome. The X-chromosome was as large as the second largest autosomal bivalent and the Y-chromosome was the smallest element of the diploid complement. The autosome length ranged from 1.3 to 5.1 μm; the X-chromosome

measured 4.4 μm and the Y-chromosome 0.9 μm. Karyometric analyses of both *Dicranthus* species are given in Tables 1 and 2.

We did not observe the first meiotic metaphases in our preparations, and so we are not able to describe the behavior of the heterochromosome bivalent. Depending on the presence of the sex chromosomes X or Y, two types of metaphase II plates were evident. The morphology of the chromosomes at metaphase II corroborates the description of the spermatogonial metaphase.

***Dicranthus majzlani* sp.n.**

Most of the autosomes are bi-armed (Fig. 40, Tab. 2). Chromosomes were counted at the spermatogonial metaphase. The karyotype was characterized by two pairs of metacentric (pairs 1, 2), three pairs of submetacentric (pair 3, 5, 6), one pair of subtelocentric (pair 4), and 4 pairs of acrocentric (pairs 7 - 10) autosomes. The X-chromosome was submetacentric and the Y-chromosome was dot-shaped. The length of the autosomes varies from 2.4 μm to 6.3 μm; the X-chromosome measured 3.0 μm and the smallest Y-chromosome 1.4 μm. The autosomal bivalents were ring-shaped and rod-shaped at metaphase I. The sex chromosomes exhibited a typical parachute association. Two types of metaphase II plates were formed, one with the submetacentric X-chromosome and the other with the dot-shaped Y-chromosome in addition to ten autosomes. Due to chromatid separation the centromeric positions were more clearly visible at metaphase II.

Both species differ in their centromere position in several autosomal pairs and the X-chromosome.

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