Faunistic and taxonomic remarks on European *Allotrichoma* Becker, 1896 (Diptera: Ephydridae) with the description of a new species from Georgia

Заметки по фауне и таксономии европейских видов *Allotrichoma* Becker, 1896 (Diptera: Ephydridae) с описанием нового вида из Грузии

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ABSTRACT. *Allotrichoma tskarishdidae* sp.n. is described from Georgia. Examination of type specimens showed that *A. filiforme* Becker is a valid species with *A. dahlii* Beschovski, syn.n. its junior synonym; *A. sicanum* Canzoneri, *A. strandi* Duda and *A. trispinum* Becker are valid species. *Allotrichoma pseudolaterale* Raffone, syn.n. is a junior synonym of *A. laterale* Loew. *Allotrichoma leotoni* Vitte is recorded from Europe (Cyprus, France) for the first time. Additional faunistic records and distribution maps are presented for *A. bifidum* Papp, *A. filiforme* Becker, *A. picenum* Canzoneri et Rampini, *A. quadripectinatum* (Becker), *A. strandi* Duda and *A. trispinum* Becker. An illustrated key for the European species of *Allotrichoma* based on the male terminalia is included.

**KEY WORDS:** Ephydridae, *Allotrichoma*, Europe, Croatia, Cyprus, France, Georgia, Germany, Greece, Kyrgyzstan, Switzerland, new species, new synonym, key, distribution map.

**ABSTRACT.** The genus *Allotrichoma* Becker, 1896 consists of about 61 valid species worldwide and is one of the larger genera of Ephydridae. There are records from the Afrotropics (16 species), Neartic (19 species), Neotropics (11 species), Palaeartic (21 species), Oriental (4 species) and Australasian (one species). Ten of these species have been reported from Europe so far. The genus is divided into three subgenera with only *Allotrichoma str.* occurring in the Palaeartic. Within the Ephydridae, *Allotrichoma* belongs to the Hechamedini (Gymnomyzinae). Its phylogenetic position was recently discussed by Mathis and Zatwarnicki [2012] and *Eremotrichoma* was proposed as its sister group.

**Introduction**

The larval biology of *Allotrichoma* is hardly known [Mathis, Zatwarnicki, 2012]. Bohart and Gressitt [1951] at first reported about larvae of *Allotrichoma* while researching the filth inhabiting flies of Guam. They found larvae at excrements of pigs. Runyan and Deonier [1979] reared Neartic *A. simplex* (Loew, 1861) from raccoon faeces and crayfish carcass. Finally Thier and Foote [1980] mentioned larvae of an unidentified *Allotrichoma* in Ohio to be “found repeatedly in muskrat faeces and decaying snails that were scattered over the mud surface”.

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At least in Europe, adults of *Allotrichoma* have a strong preference for river ecosystems and a less strong preference for inland still-water ecosystems. *Allotrichoma* can typically be found at places free of vegetation or places with only scant vegetation with at least some muddy microhabitats and some decaying material. On the coast *Allotrichoma* is observed only rarely although at least a few species might be observed at inland saline localities.

When trying to identify European specimens of *Allotrichoma* it became obvious that the distinction of males by the male terminalia was easy, but the lack of proper identification literature for identification made naming the species difficult. While working with the original descriptions and the few published taxonomic works about European Ephydridae an undescribed species came to light. This is described in this paper and a key with illustrations of male terminalia is presented.

**Material and methods**

Terminology is adopted from Cumming and Wood [2017] and genus specific interpretations from Mathis and Zatwarnicki [2012] as documented in Figs 1, 13, 15, 19. Numbers of setae refer to one side of the body only. Indices are defined in the text below. To describe the orientation of the postabdomen I use the term “dorsal view” when looking at the outer surface of the epandrium with the cerci at top. The identification of previously described species follows Krivosheina and Zatwarnicki [1997] and Zatwarnicki [1991] and the original descriptions of Beschovski [1966], Canzoneri and Rampini [1990], Papp [1974] and Vitte [1992]. The studied primary types are listed below. Nomenclature was checked with the original descriptions. Labels of holotypes are listed and numbered in the order found, commencing with the uppermost. Line-breaks on labels are indicated by backslashes. If not mentioned otherwise all specimens were collected by the author, air dried, pinned on minuten and deposited in the author’s private collection (PJHS). To investigate the male terminalia, the abdomen was dissected, macerated for about three hours in the aqueous solution of sodium hydroxide NaOH(aq), neutralized with acetic acid CH₃COOH and stored in a microvial filled with glycerine C₂H₅(OH). Decimal degree is used for coordinates if not sexagesimal degree is given on the labels. Distribution maps were generated with QGis 3.16.

**Results**

*Allotrichoma bezzi* Becker, 1896

Figs 1, 13.

*Allotrichoma Bezzi* Becker, 1896: 123; type-locality: “Sweden. Norrbotten: Edefors (66°13’N, 20°54’E)”; neotype ♂♂, des. by Mathis et Zatwarnicki [2012] (Germany, Berlin, Museum für Naturkunde der Humboldt-Universität, Mathis et Zatwarnicki [2012]).

**MATERIAL EXAMINED:** 66 ♂♂ from Germany and Finland.

**DISTRIBUTION:** *Allotrichoma bezzi* is widely distributed in Europe: Austria [Canzoneri, Rampini, 1990] as *A. pedemontanum*; Krivosheina, Zatwarnicki, 1997; Zatwarnicki, 1991), Britain [Drake, 2000], Bulgaria [Beschkovski, Zatwarnicki, 2002; Krivosheina, Zatwarnicki, 1997; Zatwarnicki, 1991], Croatia [Canzoneri, Rampini, 1990 as *A. pedemontanum*], Czech Republic [Kubátová-Hiršová, 2006], Finland [Kahanpää, Zatwarnicki, 2015], France [Becker et al., 1910], Germany [Krivosheina, Zatwarnicki, 1997; Stuke, 2011; Zatwarnicki, 1991b], Italy [Canzoneri, Rampini, 1990 as *A. pedemontanum*], Lithuania [Krivosheina, Zatwarnicki, 1997; Zatwarnicki, 1991], Poland [Krivosheina, Zatwarnicki, 1997; Zatwarnicki, 1991], Slovenia [Canzoneri, Rampini, 1990 as *A. pedemontanum*], Spain [Zatwarnicki, 1991], Sweden [Krivosheina, Zatwarnicki, 1997; Mathis, Zatwarnicki, 2012; Zatwarnicki, 1991], It is probably a boreo-montane species and the most common *Allotrichoma*-species in Scandinavia and in the Alps. Beside Europe *A. bezzi* is found in Asian Russia [Krivosheina, Zatwarnicki, 1997] and Afghanistan [Dahl, 1973, as *A. lena*] and its distribution covers a wide area of Northern America [Mathis, Zatwarnicki, 2012].

*Allotrichoma bifidum* Papp, 1974

Figs 2, 14.

*Allotrichoma bifidum* Papp, 1974: 405; type-locality: “Győn” [Hungary]; holotype ♂♂ (Hungary, Budapest, Hungarian Natural History Museum [Papp, 1974]).

**MATERIAL EXAMINED:** CROATIA: 1♂, 13.vii.2018, Čikola in Đenik, 43.857’N 16.160’E; 2♂♂, 14.vii.2018, ditto, 1♂, 25.vi.2017, fishponds 2 km S Osirovac, 45.147’N 17.747’E; 4♂♂, 27.vi.2017, floodplain Danube 0.6 km S Podunavje, 45.625’N 18.813’E; 3♂♂, 27.vi.2017, floodplain Danube 1 km SE Tikveš, 45.668’N 18.853’E; 1♂, 27.vi.2017, floodplain Danube 2.5 km S N Batina, 45.864’N 18.837’E; 1♂♂, 28.vi.2017, floodplain Danube 3.5 km NE Sarvaš, 45.551’N 18.862’E; 1♂, 29.vi.2017, floodplain Danube N Ilok, 45.230’N 19.380’E; 1♂♂, 29.vi.2017, floodplain Danube N Opatovac, 45.364’N 19.172’E; 1♂, 27.vi.2017, floodplain Danube NE Batina, 45.852’N 18.853’E; 2♂♂, 26.vi.2017, floodplain Drava N Bistrica, 45.699’N 18.393’E; 1♂, 28.vi.2017, floodplain Drava N Kopčevno, 45.608’N 18.789’E; 1♂, 25.vi.2017, floodplain Sava S Pričac, 45.134’N 17.672’E; 1♂, 23.vi.2017, Lonjsko polje 2.8 km E Cigove, 45.410’N 16.664’E; RUSSIA: 1♂, 30.vii.2016, river Temnik 5 km SSW Selenduma, 50°57’60”N 106°15’31”E, leg. M. v. Tschirnhaus.

**DISTRIBUTION:** *Allotrichoma bifidum* was described from Hungary and Romania [Papp, 1974] and later reported from Bulgaria [Beschkovski, Zatwarnicki, 2002], Serbia [Canzoneri, Rampini, 1990] and Slovakia [Zatwarnicki, 1996]. The records are summarised in Fig. 25. *A. bifidum* is a southeast species with an obvious concentration of records in the northern region of the Balkan peninsula and an isolated record from East Russia.

*Allotrichoma filiforme* Becker, 1896

Figs 3, 15.

*Allotrichoma filiforme* Becker, 1896: 123; type-locality: “Sarepta” [Russia, Europe]; lectotype ♂♂, des. by Papp [1979] (Germany, Berlin, Museum für Naturkunde der Humboldt-Universität [Papp, 1979]).

**TYPE MATERIAL EXAMINED:** Lectotype (♂♂) of *Allotrichoma filiforme* Becker, 1896: (1) “Sarepta / Christoph;” (2) “4/4’’; (3) “lateralis ?;” (4) “Coll. / H. Loew;” (5) “14391;” (6) “Allotrichoma / filiformis [sic!] / Becker;” (7) “Type;” (8) “Lectotypus;” (9) “Zool. Mus. / Berlin”. Lectotype is deposited in ZMHB. The type specimen was double pinned and this part of the type is lost. Abdomen had...
Allotrichoma laterale [Loew, 1860]
Figs 4, 16.

Hecamede lateralis Loew, 1860: 13–14; type-locality: „Süditalien und Sicilien”; lectotype ♂, des. by Papp [1979] (Germany, Berlin, Museum für Naturkunde der Humboldt-Universität [Papp, 1979]).

= Allotrichoma pseudolaterale Raffone, 2001: 21–23; type-locality: „Isola Lipari, Sorgente Lace, Terreno nudo” [Italy]; holotype ♂ (Italy, Venice, Museo Civico di Storia Naturale [Raffone 2001]): syn.n.

MATERIAL EXAMINED: 945 ♂♂ from Croatia, Cyprus, Germany, France, Georgia, Greece, Jordan, Morocco, Portugal.

TAXONOMIC REMARK: Allotrichoma pseudolaterale was distinguished from A. laterale in the original description only by two characters: “Allotrichoma (Allotrichoma) pseudolaterale n. sp., affine a A. (Allotrichoma) laterale (Loew, 1860), differisce principalmente per i tarsi uniformemente gialli (grigi in A. laterale), nonché per i caratteri genitali”. The colouration of the tarsi of A. laterale is variable and not suitable to distinguish any Allotrichoma species. The illustrations of the elongated cercus of A. pseudolaterale are within the variation of A. laterale using the right orientation. Therefore, A. pseudolaterale cannot be separated using the described characters. 4 ♂♂ paratypes (two of these with macerated terminalia) and 3 ♀♀ paratypes, all from the Museo Civico di Storia Naturale Venice, were examined and these showed no differences compared with A. laterale. A. pseudolaterale (syn.n.) is therefore proposed as a junior synonym to A. laterale (Loew, 1860).

Figs 1–4. Epandrium, cercus, surstylus of European Allotrichoma, dorsal view (above) and lateral view (below): 1 — bezii Becker, 1896; 2 — bifidum Papp, 1974; 3 — filiforme Becker, 1896; 4 — laterale (Loew, 1860); ce — cercus; ep — epandrium; pce — protruding part of cercus; su — surstylus.

Рис. 1—12. Эпандрий, церки и сурстили европейских видов Allotrichoma, сверху (верхний рис.) и сбоку (нижний рис.): 1 — bezii Becker, 1896; 2 — bifidum Papp, 1974; 3 — filiforme Becker, 1896; 4 — laterale (Loew, 1860); ce — церка; ep — эпандрий; pce — выступающая часть церки; su — сурстиль.
Remarks on European Allotrichoma

DISTRIBUTION: Allotrichoma laterale is the most common Allotrichoma species all over southern Europe and it is widely distributed in central Europe. The northern distribution of this species is marked by records from Britain at 52°N [Gibbs, 2006], northern Germany at 53°N [Cresson, 1929; Stuke, 2010], and Poland at 51° [Krivoshaina, Zatwarnicki, 1997]. Additionally, A. laterale is widespread across North Africa, the Arabian peninsula, Afghanistan, Turkey, Tadzhikistan, Turkmenistan, Uzbekistan [Krivoshaina, Zatwarnicki, 1997].

Allotrichoma leotoni Vitte, 1992

Figs 5, 17.

Allotrichoma leotoni Vitte, 1992: 255–257; type-locality: „Boured (Rif Central)” (Morocco); holotype ♀ (private collection of Bernard Vitte, France, Bordeaux [Vitte, 1992]).

Material examined: CYPRUS: 1♂, 30.iii.2015, river Dhiarizos N Souskiou [34.741°N 32.605°E]. FRANCE: 1♂, 1.viii.2019, salt swamp 4 km nwn Gruissan [43.129°N 3.047°E].

DISTRIBUTION: Surprisingly, this species has been known previously only from the type material collected in Morocco. The two new records show that A. leotoni is widely distributed in the Mediterranean Region (Fig. 27).

Allotrichoma picenum Canzoneri et Rampini, 1990

Figs 6, 18.

Allotrichoma picenum Canzoneri et Rampini, 1990b: 44–45; type-locality: „F. Tronto alla S.S. Adriatica”; holotype ♂ (Italy, Venice, Museo Civico di Storia Naturale [Canzoneri, Rampini, 1990]).

Material examined: SWITZERLAND: 2♀♀, 17.vi.1995, Biasca [46.36°N 8.97°E], leg. B. Merz & G. Bächli.

Figs 5–8. Epandrium, cercus, surstylus of European Allotrichoma, dorsal view (above) and lateral view (below): 5 — leotoni Vitte, 1992; 6 — picenum Canzoneri, Rampini, 1990; 7 — quadripectinatum (Becker, 1903); 8 — schumanni Papp, 1974; suep — surstylus-epandrium complex.

Рис. 5-8. Эпандрий, церки и сурстиль европейских видов Allotrichoma, сверху (верхний рис.) и сбоку (нижний рис.): 5 — leotoni Vitte, 1992; 6 — picenum Canzoneri, Rampini, 1990; 7 — quadripectinatum (Becker, 1903); 8 — schumanni Papp, 1974; suep — комплекс эпандрий + сурстиль.
**Allotrichoma quadripectinatum** (Becker, 1903)
Figs 7, 19.

Clasioquadripectinata Becker, 1903: 161; type-locality: „Alexandrien“ [Egypt]; lectotype ♂, des. by Zatwarnicki, 1991
(Germany, Berlin, Museum für Naturkunde der Humboldt-Universität [Zatwarnicki, 1991]).

= Allotrichoma bellicosum Giordani Soika, 1956: 103–104; type-locality: „Colomb Bechar“ [Algeria]; holotype ♂ (Italy, Venice, Museo Civico di Storia Naturale [Mathis, Zatwarnicki 1995]).

**TAXONOMIC REMARK:** Examination of the lectotype of *A. striandi* confirmed the interpretation of the species given in Stuke [2011] that had been based only on a paralectotype. *Allotrichoma strandi* is a rare species, but has probably been widely overlooked.

**DISTRIBUTION:** Besides the two records presented here the species is known from the type material which originated from „bei Nidden am Strande des Kurischen Haffs“ (Lithuania). Zatwarnicki and Hollmann-Schirrmacher [1997] report the species from Berlin (Germany) and, without any sources, from Poland, Hungary and Macedonia. Therefore, the species is hitherto only confirmed from Lithuania and Germany (Fig. 30).

**Allotrichoma trispinum** Becker, 1896
Figs 11, 23.

**Allotrichoma trispinum** Becker, 1896: 124; type-locality: „aus dem Oderwalde bei Maltsch, Schlesien“ [Poland]; lectotype ♂, des. by Papp [1979] (Germany, Berlin, Museum für Naturkunde der Humboldt-Universität [Papp, 1979]).

**TYPE MATERIAL EXAMINED:** Lectotype (♂) of *Allotrichoma trispinum* Becker, 1896: (1) „Oderwald / 18/8. 39244.“, (2) „trispina / Beck.“, (3) „Lectotypus;“ (4) Zool. Mus. / Berlin; (5) „Allotrichoma / filiforme / Becker / det. / M. Krivosheina, 1994“.

**LECTOTYPE EXAMINED:** The type is double pinned and in an acceptable state. Abdomen had been removed, strongly macerated and dissected but was dried out. I put the remains of the abdomen in a microvial filled with glycerine. Sternite 5 is missing.

**ADDITIONAL MATERIAL EXAMINED:** GERMANY: 10°, 23.v.2015, Brandenburg, Talssperre Spremberg [51.653°N 14.381°E]; 1°, 23.vii.2015, Mecklenburg-Vorpommern, beach Mönkebude [53.773°N 13.969°E].
Remarks on European *Allotrichoma*

mern, Elbe 0.5 km W Festung Dömitz [53.142°N 11.237°E]; 1♂, 12.viii.2015, Mecklenburg-Vorpommern, Elbe, Gothmann [53.360°N 10.735°E]; 2♂♂, 15.vii.2009, Lower Saxony, Alter Fähranleger Drettem [53.203°N 10.955°E]; 3♂♂, 15.vii.2009, Lower Saxony, beach Radegast [53.343°N 10.735°E]; 1♂, 20.iv.2018, Lower Saxony, floodplain Elbe N Katemin bei Neu Darchau [53.236°N 10.876°E]; 1♂, 7.viii.2008, Lower Saxony, floodplain Elbe 2 km N Alt Garge [53.285°N 10.791°E]; 2♂♂, 6.vii.2008, Lower Saxony, floodplain Elbe, Dannenitz [53.136°N 11.179°E]; 1♂♂, 7.viii.2008, Lower Saxony, floodplain Elbe E Dömitzer Brücke [53.137°N 11.230°E]; 1♂♂, 6.vii.2008, Lower Saxony, Elbe, Pevestorf [53.076°N 11.451°E]; 7♂♂, 6.vii.2008, Lower Saxony, floodplain Elbe, Gorleben [53.052°N 11.354°E]; 1♂, 16.vii.2009, dito; 20♂♂, 7.viii.2008, Lower Saxony, floodplain Elbe, Grippel [53.076°N 11.304°E]; 3♂♂, 6.vii.2008, Lower Saxony, floodplain Elbe, Jasebeck [53.163°N 11.135°E]; 4♂♂, 16.vii.2009, Lower Saxony, floodplain Elbe, Lasse [53.068°N 11.317°E]; 1♂, 15.vii.2009, Lower Saxony, floodplain Elbe N Sassendorf [53.358°N 10.571°E]; 1♂, 17.v.2020, Lower Saxony, floodplain Elbe E Wussegel [53.136°N 11.080°E]; 1♂, 15.vii.2009, Lower Saxony, floodplain Elbe S Drage [53.414°N 10.258°E]; 1♂, 7.viii.2008, Lower Saxony, floodplain Elbe, Schnakenburg [53.038°N 11.566°E]; 1♂♂, 27.v.2017, dito; 2♂♂, 7.vii.2008, Lower Saxony, floodplain Elbe, Tiemesland [53.190°N 10.981°E]; 4♂♂, 7.vii.2008, Lower Saxony, floodplain Elbe, Vietze [53.070°N 11.402°E]; 8♂♂, 16.vii.2009, Lower Saxony, floodplain Elbe W

Figs 9–12. Epandrium, cercus, surstylus of European *Allotrichoma*, dorsal view (above) and lateral view (below): 9 — *sicanum* Canzoneri, 1980; 10 — *strandi* Duda, 1942; 11 — *trispinum* Becker, 1896; 12 — *tskarishdidae* sp.n.

Рис. 1—12. Эпандрий, церки и сурстили европейских видов *Allotrichoma*, сверху (верхний рис.) и сбоку (нижний рис.): 9 — *sicanum* Canzoneri, 1980; 10 — *strandi* Duda, 1942; 11 — *trispinum* Becker, 1896; 12 — *tskarishdidae* sp.n.
Thorax covered with brown to silver grey dusting. Scutum with lines of short black setulae. Scutum and scutellum grey dusted; scutum with a central stripe and 2 sublateral stripes of distinct brown dusting. Anepisternum and katepisternum with scattered setulae. Pleura silver grey dusted with a brown spot dorsally at the anepisternum and dorsally at the notopleuron. Chaetotaxy: 2–4 lines of acrostichal setae; 0–1 dorsocentral setae; 1 prescutal seta; 1 presutural supraalar seta; 1 postpronotal seta; 2 notopleural setae, posterior inserted above level of anterior; 1 postalar seta; 1 large apical, 1 large lateral, 1 small lateral and 2 small central scutellar setae; 1 posterdorsal katepisternal seta; 2 setae at posterior margin of anepisternum. Wing hyaline, completely covered with microtrichia. Veins light brown. Costa without setae between subcostal break and Rs1. Alula small, with long brown setulae at its hind margin. Costal index 1 (straight line distance between the apices of Rs and Rs2 [section 2 of Costa]: straight line distance between the apices of Rs2, and Rs3 [section 3 of Costa]) = 2.6. Costal index II (straight line distance between the apices of Rs2, and Rs3, [section of Costa]: straight line distance between the apices of Media and Rs3 [section of Costa]) = 2.5. Rs vein-ratio (straight line distance along vein Rs1 between crossvein r-m and branch of Rs3, and Rs4, [section of Rs1]: distance apical of r-m [section 2 of Rs1]) = 0.1. M vein-ratio (straight line distance along vein M between crossveins dm-cu and r-m [section of M]: distance apical of dm-cu [section 2 of M]) = 0.4. Costa reaching apex of media. Radial vein R5 almost straight. Haltere whitish with light brown base. Legs black to brown with bases and apices of tibiae yellow brown and three basal tarsomeres yellow. Legs silver grey dusted with the exception of hind side of shining hind femur and hind tibia. Legs covered with short black setulae. Hind metatarsus ventrally with dense golden setulae. Fore femur posterdorsally with 5–6 black setae; middle femur anterodorsally with 4 setae. Metatarsus II-braun. Tiibia-II-ratio (length metatarsus 2 : length tibia 2) = 0.4. Abdomen black. Tergites grey dusted and covered with black setulae. Tergite III-IV-ratio (length tergite 3 medially : length tergite 4 medially) = 0.8. Tergite IV-V-ratio (length tergite 4 medially : length tergite 5 medially) = 0.5. Stermites 2–5 each with 2–5 black setulae. No process of sternite 5 ("medial process at 5th sternal flap" sensu Mathis and Zatwarnicki 2012) but with a pair of triangular extensions and base of sternite 5 with long posterior directed setae (Fig. 24). Cercus-epandrium-surstylus-complex as shown in Fig. 12. Epandrium with 2 strong setae. Cercus with 2 large apical inwards curved setae and 3 smaller, subapical, ventral, upwards curved setae. Surstylus completely fused with epandrium and not distinct. Its position might be marked by a row of ventrally directed setulae (Fig. 12). Postgonite long, straight, with broad base, with two lateral directed small setulae and no obvious seta at its base. Phallus apodeme triangular with the muscle attachment slightly backwards directed. Phallus elongated and without any obvious characters.

**DIAGNOSIS:** *Allotrichoma tskarishdidae* sp.n. belongs to a group of *Allotrichoma* species that is easily recognised by this set of characters: (i) face only shallowly convex and not protruding nor with a tubercle; (ii) sternite 5 without distinct process (Fig. 24); (iii) surstylus, cercus and epandrium fused. *Allotrichoma* species are known from the Palaearctic and from the Arabian Peninsula to belong to this *quadripectinatum*-species group: *A. choanum* Mathis et Zatwarnicki, 2017 (United Arab Emirates), *A. quadripectinatum* (Becker, 1963) [Fig. 29]. This *quadripectinatum* species group shares impor-
Figs 13–24. Male process of sternite 5 of European Allotrichoma, lateral view: 13 — bezzii Becker, 1896; 14 — bifidum Papp, 1974; 15 — filiforme Becker, 1896; 16 — laterale (Loew, 1860); 17 — leotoni Vitte, 1992; 18 — picenum Canzoneri, Rampini, 1990; 19 — quadripectinatum (Becker, 1903); 20 — schumanni Papp, 1974; 21 — sicanum Canzoneri, 1980; 22 — strandi Duda, 1942; 23 — trispinum Becker, 1896; 24 — tskarishdidae sp.n.; ca S5 — central arm of process of sternite 5; la S5 — lateral arm of process of sternite 5; lp S5 — lateral plate of process of sternite 5; p S5 — process of sternite 5; te S5 — triangular extension of sternite 5.

Рис. 13–24. Отrostki 5 стернита самцов европейских видов Allotrichoma, сбоку: 13 — bezzii Becker, 1896; 14 — bifidum Papp, 1974; 15 — filiforme Becker, 1896; 16 — laterale (Loew, 1860); 17 — leotoni Vitte, 1992; 18 — picenum Canzoneri, Rampini, 1990; 19 — quadripectinatum (Becker, 1903); 20 — schumanni Papp, 1974; 21 — sicanum Canzoneri, 1980; 22 — strandi Duda, 1942; 23 — trispinum Becker, 1896; 24 — tskarishdidae sp.n.; ca S5 — центральный выступ отростка 5-го стернита; la S5 — латеральный выступ отростка 5-го стернита; lp S5 — латеральная пластинка отростка 5-го стернита; p S5 — отросток 5-го стернита; te S5 — треугольное расширение 5-го стернита.
1. Face only shallowly convex and without a tubercle; ster- 
nite 5 without distinct process but with a pair of triangular 
extensions only and base of ster- 
nite 5 with long posteriorly 
directed setae (Figs 19, 24); surstylus and epandrium com-
pletely fused (Figs 7, 12), surstylus not distinct but prob-
ably marked by a row of ventrally directed setulae (Figs 7, 12); cercus apically with medial margin straight 
and lateral margin concave (Figs 7, 12) ........................................ 2

2. Cercus apically with 2 obvious setae and apically with 
ventrally directed setae (Fig. 12) .................. 7

3. Protruding cercus convex to straight, apically not wid-
ened and beside few setulae basally only apically with less 
than 5 short setae (Figs 3, 10–11); process of ster- 
nite 5 broad and with a pair of ventrally directed, lateral 
plates and without lateral arms (Figs 15, 22–23) ........... 4

4. Maximum distance of protruding cerci at maximum slightly 
longer than width of epandrium (Fig. 10); process of ster- 
nite 5 less protruding, setulose tip longer, slightly 
conca- 
vex and with several setae in front of lateral plate (Fig. 22) ........................................ 6

5. Protruding cercus curved in more than the basal half and 
therefore apically both cerci close together (Fig. 11); base 
of protruding cercus only slightly broader than its apex (Fig. 11); tip of protruding cercus slightly enlarged and 
with 3–5 setae almost as strong as those at the base of 
protruding cercus (Fig. 11); dorsal surface of process of 
stermite 5 almost straight (Fig. 23) ............... 5

6. Process of sternite 5 with two lateral arms and without a 
central arm (Figs 16, 21) .............................. 3

7. Process of sternite 5 with two lateral arms and with a 
central arm (Figs 13–14, 17–18, 20) ................... 8

8. Cercus apically obviously widened horizontally (Fig. 8) 
or vertically (Fig. 2) ........................................ 9

9. Widening of cercus vertically, visible in lateral view (Fig. 2); 
tip of protruding cercus with setae less than half as long 
as protruding cercus (Fig. 2); protruding cercus with 
setulae in apical half only (Fig. 2); process of ster- 
nite 5 with one central and two lateral arms of about the 
same length (Fig. 14) ........................................ bifidum Papp

10. Protruding cercus almost straight with a subapical 
shoulder at its inner margin (Fig. 1); protruding cercus with 
several long, curled setae, the longest of these setae 
almost as long as protruding cercus (Fig. 1); process of 
stermite 5 with two lateral arms and a very short central 
arm (Fig. 13) ........................................ bezzi Becker

11. Protruding cercus with 2 anterior directed subapical long 
setae and no inward directed strong apical seta (Fig. 5); 
central arm of process of stermite 5 with several strong 
setae at its whole length (Fig. 17) ......................... leotoni Vitte

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version of this manuscript.
Fig. 25. Records of *Allotrichoma bifidum* Papp, 1974 (based on the data presented in this paper and data from Beschovski, Zatwarnicki [2002], Papp [1974], Canzoneri, Rampini [1990], Zatwarnick [1996]).

Fig. 26. Records of *Allotrichoma filiforme* Becker, 1896 (based only on the data presented in this paper and the dates of primary types of *A. filiforme* and *A. dahli*).
Fig. 27. Records of *Allotrichoma leotoni* Vitte, 1992 (based on the data presented in this paper and data from Vitte [1992]).

Рис. 27. Распространение *Allotrichoma leotoni* Vitte, 1992 (по данным представленной статьи и работы Vitte [1992]).

Fig. 28. Records of *Allotrichoma picenum* Canzoneri, Rampini, 1990 (based on the data presented in this paper and data from Canzoneri, Rampini [1990], Hollmann-Schirrmacher, Zatwarnicki [1997]).

Рис. 28. Распространение *Allotrichoma picenum* Canzoneri, Rampini, 1990 (по данным представленной статьи и работ Canzoneri, Rampini [1990], Hollmann-Schirrmacher, Zatwarnicki [1997]).
Fig. 29. Records of *Allotrichoma quadripectinatum* [Becker, 1903] (based on the data presented in this paper and data from Becker [1903], Beschovski, Zatwarnicki [2002], El-Hawagry et al. [2018], Giordani Soika [1956, as *A. bellicosum*], Stuke [2012], Vite [1991, as *A. bellicosum*]).

Рис. 29. Распространение *Allotrichoma quadripectinatum* [Becker, 1903] (по данным представленной статьи и работ Becker [1903], Beschovski, Zatwarnicki [2002], El-Hawagry et al. [2018], Giordani Soika [1956, как *A. bellicosum*], Stuke [2012], Vite [1991, как *A. bellicosum*]).

Fig. 30. Records of *Allotrichoma strandi* Duda, 1942 (based on the data presented in this paper and data from Duda [1942], Zatwarnicki, Hollmann-Schirrmacher [1997]).

Рис. 30. Распространение *Allotrichoma strandi* Duda, 1942 (по данным представленной статьи и работ Duda [1942], Zatwarnicki, Hollmann-Schirrmacher [1997]).
Fig. 31. Records of *Allotrichoma trispinum* Becker, 1896 (based only on the data presented in this paper).

Рис. 31. Распространение *Allotrichoma trispinum* Becker, 1896 (по данным представленной статьи).

Fig. 32. Records of *Allotrichoma tskarishdidae* sp.n.

Рис. 32. Распространение *Allotrichoma tskarishdidae* sp.n.
