

# New *Xyela* Dalman, 1819 species from Hungary close to *Xyela lugdunensis* (Berland, 1943)

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HARIS, A. & GYURKOVICS, H.: *New Xyela Dalman, 1819 species from Hungary close to Xyela lugdunensis (Berland, 1943)*.

**Abstract:** *Xyela nigroabscondita spec. nov.* is described from Hungary and compared to *Xyela lugdunensis* (Berland, 1943), analysis and photos of the type of *Xyela helvetica* (Benson, 1961) is published.

**Keywords:** *Xyela nigroabscondita spec. nov.*, new species, Hungary, Hymenoptera, Symphyta, Xyelidae, *Xyela*, *Xyela lugdunensis* (Berland, 1943), *Xyela helvetica* (Benson, 1961)

## Introduction

The sawfly fauna of Szeged and its environment is hardly known and only a limited number of investigations were carried out in this area. Imre Vellay investigated the insect fauna of the region and listed 36 Symphyta species (VELLAY 1899). His sawfly list was included in MOCSÁRY 1900. In 1962, Béla Ambrus recorded some Symphyta galls from the area of river Theis (Tisza) at Szeged (AMBRUS 1962). Additional, new sawfly records are available in ROLLER and HARIS (2008). The *Xyela* fauna of the Carpathian Basin is discussed in MOCSÁRY (1900), FRANZ (1982), BLANK (2002), HARIS (1998), SCHEDL (1980, 1997), GREGOR and BATA (1940), LUKAS (1991, 1992a,b), BENES (1989), MÓCZÁR and ZOMBORI (1973), ROLLER (1999, 2004, 2005), ROLLER et al., (2006), ROLLER and HARIS (2008), ZOMBORI (1974, 1975, 1985, 1999) and WIERZEJSKI (1868).

## Material and methods

The types of the new species were collected in Szeged: Újszeged, Népliget (City Park) about 20 m away from the main road under some isolated black pine trees (*Pinus nigra*). The coordinates are +46°14'53.19"N and +20°9'46.54"E, the altitude above sea level is about 85 m.

They were captured on the ground amongst leaf-litter and fallen twigs between 9h-11h a.m., during the period when the sun directly lit the ground beneath the crone of the pine trees. They were apparently freshly emerged specimens, since they were not fully colored. They were kept for a couple of days in plastic vials (diameter 25 mm) plugged

with cotton balls in order to reach full maturity. During this time, both collected males were observed in copula with females excluding the possibility that they would belong to different species. Copulation started almost immediately upon their exposure to light. (Vials containing the living specimens were kept in a dark drawer, and from time to time checked to see whether individuals are gained their mature coloration).

The occurrence of the species is strictly restricted to the few square meters of two separate areas inside the City Park (Népliget) where the original findings were done. First specimens were captured at 14th of March in 2011 and the last specimens were observed and photographed on 19th of March 2009, no specimens were captured later, although the area was monitored on a daily basis during the next 2 and a half weeks in each year. We always observed the new species in the first sunny days of the early spring followed by long winter season. Similarly to *X. alpigena*, the active period of the new species begins a few weeks earlier than that of other *Xyela* sp. living in the same habitat.

For identification we consulted the keys of RASNITSYN (1965), SCHEDL (1978), BLANK (2002), BLANK, SHINOHARA and BYUN (2005), BERLAND (1947). We also studied the original descriptions of the closely related species: BERLAND (1943) and BENSON (1961). Finally, for comparison, we studied the type specimens of *Xyela lugdunensis* (Berland, 1943) and *Xyela helvetica* (Benson, 1961). We found, the new species is in close relationship with *X. lugdunensis* but *X. helvetica* represents different lineage.

*Material checked:*

Holotype of *Xyela lugdunensis* (Berland, 1943): female, Lyon, coll. J. de Gaulle, 1919 (Muséum national d'Histoire naturelle, Paris); holotype of *Xyela helvetica* (Benson, 1961): female, Suisse, Gr. Val. Ftur, 23. 04. 1953, coll.: J. Aubert (Bündner Naturmuseum, Chur); *Xyela helvetica* (Benson, 1943), 1 female, Haller Zunderkopf, Karwendelgebirge, 03. 05. 1953, an Latschen, leg. E. Pechlaner (University of Innsbruck);

Both authors are authors of the new species.

***Description of the new species***

***Xyela nigroabscondita spec. nov.***

(Figs.: 2, 4, 6, 8, 10, 11, 12, 13, 14)

Holotype (Figs. 2 and 4): Szeged: Újszeged: Népliget, 14. 03. 2011, female (Somogy County Museum, Kaposvár). Paratypes: 1 female, topotypic, (Somogy County Museum, Kaposvár); 1 male, topotypic (Somogy County Museum, Kaposvár); 1 female topotypic but 15. 03. 2011 (Hungarian Natural History Museum, Budapest) and 1 male topotypic but 15. 03. 2011 (Hungarian Natural History Museum, Budapest). Holotype and paratypes were collected by Dr. Henrik Gyurkovics.

Female (Figs. 2 and 4, light color variation). Head dark brownish-black (Fig. 8). Yellow: wide whole orbits, gena, labrum, base of mandibles, 2 large lateral oval spots on clypeus, supraclypeal and interantennal area, 2 spots lateral to vertex. Palpi yellow. Entire first segment, basal third of second and that of third segment of maxillar palp black. Antenna black, ventral part of third antennal segment reddish brown. Thorax black, central part of mesoscutellum and lateral mesonotal lobes next to furrow of the middle lobe with 1-1 yellow spots. Inner part of tegula white. Legs brownish black, fore and middle knees, fore tibia light brown. Abdomen dark brownish black. Lateral part of last tergite with light brown spot, wide apical margin of hypopygium with brownish white margin. Abdominal segments with narrow white hind margins. Ovipositor dark brownish black. Base of valvifer 2 with yellowish brown spot. Basal part of valvula 3

with white triangular spot (Fig. 6). Clypeus with blunt middle projection. Gena about 1.4x as wide as diameter of front ocellus. Postoccipital carina missing. Head gently and clearly contracted behind eyes. Frontal area oval-suboctagonal with deep supraantennal pit. Ratio of antennal segments: 28:9:80:24:26:20:16:12:11:10:10:9. Length of scape : length of 3rd palpar segment 3: 1.32 : 1.0. OOL : POL : OCL: 2.44 : 1.0 : 1.67. Length/width of antennal segment 8: 8.0 : 1.0. Head, entire thorax and abdomen covered with fine, superficial coriaceous surface sculpture, gently shiny. Cenchri dark grey. Wing brownish infusate. Venation dark brown. Stigma transparent yellow. RS+M vein missing, therefore crossvein between R and 1M interstitial with Rs. Hind tibia with 2-2 middle and middle tibia with 1 and below this 2 middle long spines besides tibial spurs. Claws with minute inner tooth. Body nearly bold. Apical margins of labrum with short, white and soft hairs. Femora and tibiae with short, white sparse pubescence, tarsi with short, white and dense pubescence. Valvula 3 with few, sparse short and long white setae. Length of inner hind tibial spur: length of hind basitarsus: 6: 14. Ratio of hind tarsal segments: 28: 12: 8 : 5 : 15. Basal width/length of valvula 3: 1.0 : 11.0. Length of ovipositor (v2+v3) : length of fore wing: 0.72 : 1.0. Length of valvula 3 : length of valvifer 2: 2.48 : 1.0. Basal width of valvula 3 : median width of valvula 3: 1.13 : 1.0. Length of hind tibia : length of valvula 3: 1.0 : 2.03. Length of 3rd antennal segment : length of hind tibia: 1.0 : 1.15. Valvula 3 with parallel sides and strongly narrowed but clearly blunt apex. Length without valvula 3: 4.0 mm. Length with valvula 3: 6.15 mm.

Paratypes (more typical, dark color variation), individual differences:

Male (Figs. 10, 11 and 14): similar to female. Differences: lateral mesonotal lobes with only minute dark reddish brown spot, third antennal segment entirely reddish brown, last sternum (sternum 9) brownish white. Penis valve in Fig. 10. OOL : POL: 1.90-1.77 : 1.0, POL : OCL: 1.5 : 1.0. Length/width of antennal segment 8: 8.3-8.0 : 1.0. Length of 3rd palpar segment : length of scape: 1.42-1.26 : 1.0. Length: 3.88-3.60 mm.

Female paratypes (Fig. 12): Mesonotal lateral lobes without reddish-brown spot. OOL : POL: 2.44-1.78 : 1.0, POL : OCL: 1.67-1.41 : 1.0. Length/width of antennal segment 8: 8.4-8.0 : 1.0. Basal width/total length of valvula 3: 12.5-9.7: 1.0. Total length of ovipositor (v2+v3) : length of fore wing: 0.73-0.69 : 1.0. Length of 3rd palpar segment : length of scape: 1.33-1.32 : 1.0. Length of valvula 3 : length of valvifer 2: 2.48-2.30 : 1.0. Basal width of valvula 3 : median width of valvula 3: 1.13-1.07 : 1.0. Length of hind tibia : length of valvula 3: 2.03-1.97 : 1.0. Total length : total length without valvula 3: 1.54-1.56 : 1.0. Length: 5.3-6.15 mm. Length without valvula 3: 3.4-4.0 mm.

*Etymology*: nigro: dark, abscondita: hidden.

### **Differences:**

Its closest relative is *Xyela lugdunensis* (Berland, 1943) (Figs. 1, 3, 5, 7 and 9). The main differences are listed in 11 points below:

1. Third segment of maxillar palp very long in the new species (1.42-1.26 : 1.0) (Fig. 7), whereas hardly longer than scape in *Xyela lugdunensis* (1.1:1.0). In this aspect, the new species can not belong to the former genus *Xyelatana* Benson, 1938 where both species: *Xyela lugdunensis* (Berlnad, 1943) and *Xyela helvetica* (Benson, 1961) were originally placed! Compare the maxillar palps also in Figs 3 and 4.

2. Valvula 3 wedge-shaped, clearly widened basally in *Xyela lugdunensis* (Fig. 3 and 5) but parallel in the new species (Fig. 4 and 6).

3. In *Xyela lugdunensis*, lower margin of valvula 3 clearly arched (Fig. 3 and 5), but straight in the new species (Fig. 4 and 6).

4. Dorsal margin of valvula 3 straight in *Xyela lugdunensis* (Fig. 5) but in the apical third of dorsal margin of valvula 3 slightly but clearly concave in the new species (Fig. 6) (absolutely true and visible in all females).

5. Base of valvula 3 with sharp white triangular spot, otherwise dark brownish black (Fig. 6). In *Xyela lugdunensis* valvula 3 dominantly yellow with a longitudinal brown band (Fig. 5).

6. Color of *Xyela lugdunensis* is light (anterior mesonotal lobes with yellow spot, legs are dominantly yellow, antenna is reddish-yellow etc.) (Figs. 1, 3, 7), the new species is dominantly black (anterior mesonotal lobes without any spot, antenna is black (except 3rd segment in ventral view), legs are brownish-black etc.) (Figs. 2, 4, 8 and 13).

7. Total length of body with valvula 3 : total length without valvula 3 is 1.54 max. 1.56 (54-56%) in the new species, but 1.95 in *Xyela lugdunensis* (95%!).

8. Cenchri are long, elongated in *Xyela lugdunensis* (Fig. 1) but they are short and rounded in the new species (Fig. 3).

9. The white triangular-shaped spot on base of valvula 3 (Fig. 6) is a characteristic feature of the new species which does not occur in any other *Xyela* species.

10. RS+M vein missing in the new species (Fig. 4 and 12), therefore crossvein between cells R and 1M interstitial with Rs. It is true for all 5 specimens (males and females). In *Xyela lugdunensis*, RS+M long, crossvein between cells R and 1M and vein Rs far from each other (Fig. 2).

11. Rs1 interstitial with 2rm in *Xyela lugdunensis* (Fig. 3) but in the new species 2rm runs behind RS1 (Fig. 4). In one, slightly aberrant paratype, 2rm runs to half way between 2r and Rs1. (Fig. 12).

### **Classification**

In RASNITSYN (1965), the new species runs to the *Xyela linsley* group and to *Xyela lugdunensis* (Berland 1943) species. The differences between *X. lugdunensis* Berland and the new species are discussed above.

SCHEDL 1978 divided Xyelinae into genera *Xyela* Dalman, 1819 and *Xyelatana* Benson, 1938. The new species cannot be placed into any of them. It cannot be *Xyela* Dalman (sensu Schedl) because according to his definition "Ovipositor viel kürzer als der übrige Körper" and "Maxillarpalpus stärker vergrößert, wobei das 3. Basalglied dicker als das 3. Antennenglied". None of these above hold true for the new species: it has long ovipositor, the ovipositor nearly as long as the length of body up to cerci (ovipositor: 1.00: body: 1.11), and third segment of maxillary palp not wider than 3rd segment of antenna. The new species cannot be a member of the genus *Xyelatana* Benson (sensu SCHEDL 1978) either, because, according to his definition, in *Xyelatana*, Benson: "Maxillarpalpus im 3. Glied dünner als das 3. Antennenglied und kürzer als das erste". The 3rd maxillary palp segment in the new species much longer than first antennal segment.

In the key of Blank (see BLANK 2002) females would run to couplet 3, however, the statement of Blank about the colour of femora does not match for the new species at all: "Femora pale ventrally and mostly dorsally, anteriorly with a dark longitudinal stripe (at least on posterior femora), posteriorly more or less infuscate". Femora of the new species uniformly brownish black without any pale color or any strip.

Subsequently, it would run to the alpigena and longula groups. However, the new species does not fit into any of them. It can not be a member of alpigena group, because according to the definition of Blank "alpigena-group: *X. alpigena* and *X. lugdunensis*. Ovipositor wedge-shaped, diamond-shaped in cross-section and rounded distally". The ovipositor of the new species is definitely not wedge shaped, therefore the first statement



**Fig. 1:** *Xyela lugdunensis* (Berland, 1943)  
holotype in dorsal view  
(Photo: Mlle Agnièle Touret-Alby)



**Fig. 2:** *Xyela nigroabscondita* spec. nov.  
holotype in dorsal view  
(Photo: Zoltán György)



**Fig. 3:** *Xyela lugdunensis* (Berland, 1943)  
holotype in lateral view  
(Photo: Mlle Agnièle Touret-Alby)



**Fig. 4:** *Xyela nigroabscondita* spec. nov.  
holotype in lateral view  
(Photo: Zoltán György)



**Fig. 5:** *Xyela lugdunensis* (Berland, 1943)  
ovipositor in lateral view  
(Photo: Mlle Agnièle Touret-Alby)



**Fig. 6:** *Xyela nigroabscondita* spec. nov.  
ovipositor in lateral view  
(Photo: Zoltán György)



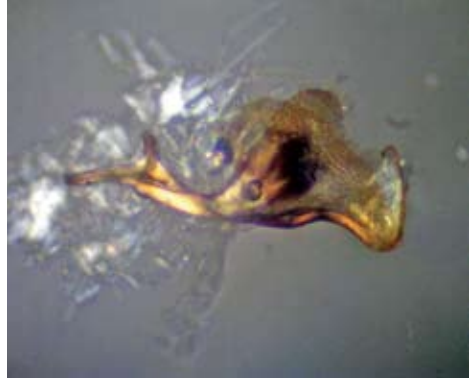
**Fig. 7:** Head and thorax of *Xyela lugdunensis* (Berland, 1943)  
(Photo: Mlle Agnèlle Touret-Alby)



**Fig. 8:** Head and thorax of *Xyela nigroabscondita* spec. nov.  
(Photo: Zoltán György)



**Fig. 9:** Face of *Xyela lugdunensis* (Berland, 1943)  
(Photo: Mlle Agnèlle Touret-Alby)



**Fig. 10:** Penis valve of *Xyela nigroabscondita* spec. nov.  
(Photo: Oravecz Dezső)



**Fig. 11:** Male of *Xyela nigroabscondita* spec. nov.  
(Photo: Henrik Gyurkovics)



**Fig. 12:** *Xyela nigroabscondita* spec. nov. paratype  
(Photo: Henrik Gyurkovics)



Fig. 13: *Xyela nigroabscondita* spec. nov.  
(living female specimen)  
(Photo: Henrik Gyurkovics)



Fig. 14: *Xyela nigroabscondita* spec. nov.  
(living male specimen)  
(Photo: Henrik Gyurkovics)



Fig. 15: *Xyela helvetica* (Benson, 1961)  
holotype  
(Photo: Henrik Gyurkovics)



Fig. 16: *Xyela helvetica* ovipositor  
(Photo: Henrik Gyurkovics)

of Blank does not match. Furthermore, according to Blank: "*Valvula 3 largely pale along baso-ventral margin, dorsally and distally black*". In contrast, the valvula 3 is entirely black except the sort triangular white spot on the very base of valvula 3. Following the key of Blank, three important features exclude the new species from the *alpigena* group: shape of sawsheath (not wedge shaped), color of femora (uniformly dark) and also the color pattern of valvula 3 (compare Figs. 5 and 6). The penis valve of the new species shows definite similarity to *Xyela alpigena* (Strobl, 1895), figured by Blank, in this way, the new species is related to the *alpigena*-group, although according to the above mentioned 3 criteria this species needs a separate group.

It can not be a member of the *longula* group either, since, according to the statement of Blank "*Upper and lower side of valvula 3 parallel in basal half, distally with an acicular tip*". While the sides of valvula 3 of the new species are parallel indeed, the tip is definitely rounded, without any acicular tip.

Finally: according to the key of SCHEDL (1978) and BLANK (2002) the new species can not be placed in any European group (discussed above) but according to RASNITSYN

(1965) the new species belongs to the linsley-group and related to *Xyela lugdunensis* (BERLAND 1943). The differences from *Xyela lugdunensis* Berland is discussed above in 11 points.

### ***Conservation of the species***

We assume that further populations exist in the East Mediterranean region, but till now the only known population is restricted to Szeged: Népliget (City Park). The local authorities have serious responsibility for saving this habitat and the population of the new species. We propose the following actions:

1. Save the black pines, do not allow to cut them.
2. It is important to have blooming black pines in each year in the park. Judged by the life cycle of other *Xyela* species, larvae of the new species almost certainly feed on the male cones of black pine (although they were not captured and described).
3. Never use insecticides and other chemicals in the Park.
4. Keep the soil undisturbed. Larvae diapause in the soil.
5. Generally keep this part of the City Park (Népliget) undisturbed with minimal gardening.

### Acknowledgements

We express our grateful thanks to Dr. Levente Ábrahám (Somogy County Museum), to Mlle Agnièle Touret-Alby (Muséum national d'Histoire naturelle, Paris), to Dr. Raimund Schnegg and Prof Dr. Wolfgang Schedl (University of Innsbruck), to Mr. Zoltán György (Hungarian Natural History Museum, Budapest) and to Dr. Marion Schmid (Bündner Naturmuseum, Chur). We are also thankful to Dr. Gábor Kárpáti for his help in photography.

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## Appendix

*Xyela helvetica* (Benson, 1961)

(Figs. 15 and 16)

Holotype: "Suisse-Gr., Val. Ftur, 23. 04. 53., J. Aubert", 1 female.

The type is in very poor, fragmented condition. Antennae missing, except left 3 basal segments. Left middle and both hind tarsi are missing. The abdomen is with only four segments. Ovipositor is removed and kept in a separate capsule in glycerin. Most of mesopleuron and mesosternum are also missing.

Description: Head dominantly yellow, brown: larger spot covering vertex, part of temples and frontal area where projecting down to antennae, basal margin and middle spot of clypeus, small spot at upper hind corner of eyes and total backside of head (behind temples and vertex). Antennal segments 1-3 reddish brown, scape dark reddish-brown (other segments missing). Palpi yellow. Thorax brown. Middle, lateral lobes of mesonotum and mesoscutellum with yellow spot. Cenchri whitish-yellow, large, elongated. Metascutellum with whitish-yellow middle spot. Wings hyaline, stigma, and venation transparent yellow. Remained fragment of mesopleuron brown with elongated yellow spot. Legs brownish yellow, dorsal surface of all femora darker yellowish-brown. Hind tibia with 2 spurs, with 2 middle spines and one spine above those. One visible claw is smooth without inner tooth (most of claws missing). Head contracted behind eyes. Clypeus with median projection. Head, mesonotum and mesoscutellum with fine, superficial coriaceous surface sculpture, moderately shiny. OOL : POL: 2.38 : 1.0. OOCL:POL: 1.38 : 1.0. Basal width of valvula 3 : total length of valvula 3: 1:16. Length of 3rd segment of maxillar palp : length of scape: 1.0 : 1.0. Basal width of valvula 3 : median width of valvula 3: 4.0 : 5.0. Length of 3rd antennal segment : largest diameter of eye: 2.0 : 1.0. Length of hind tibia : length of valvula 3: 1.0 : 2.45. Length of 3rd antennal segment : length of hind tibia: 1.0 : 1.36. Valvula 3 parallel sided with clear acicular tip.

Submitted: 10. 07. 2011

Accepted: 15. 08. 2011

Published: 15. 10. 2011