

Cixius (*Tetracixius*) *pinivorus* sp. n.,
a new planthopper species from the western Pyrenees
(Homoptera: Auchenorrhyncha: Fulgoromorpha: Cixiidae)

A. OROSZ

Abstract: Description of a new Cixiidae species, *Cixius* (*Tetracixius*) *pinivorus* sp. n. is given, in comparison with its sister species *Cixius* (*Tetracixius*) *lineolatus* Ribaut, 1960. With 19 figures.

Key words: Cixiidae, new species, western Pyrenees

INTRODUCTION

In 2001 a zoological expedition was led to the western Pyrenees, with the research permission of the authorities of Catalonia. The major aim of the expedition was the field study of the Cixiidae fauna of the region, with special reference to the *Tachycixius pyrenaicus* species-group. Luckily we had the opportunity to collect a considerable material of this species complex, on the other hand, a short series of an unusual, relatively large Cixiidae species with conspicuous wing pattern was also found during this trip. The study of this series revealed that this species is a close relative of *Cixius* (*Tetracixius*) *lineolatus* Ribaut, 1960, but displays significant differences in the details of the ano-genital complex compared with those of the eastern Pyrenean taxon. The concept that these two taxa represent two distinct species has been proven by the subsequent study of the holotype of *C. (T.) lineolatus*, due to the courtesy of Dr Bourgoïn. It is worth mentioning that the study of the holotype could be extended to the external morphology of the specimen, for the details of the ano-genital complex the original figures of Ribaut (1960) should be used.

The systematic part contains the formal description of the new species, *Cixius* (*Tetracixius*) *pinivorus* sp. n., the detailed comparison (differential diagnose) of the two sister species, and notes on the bionomics and the distribution of the two *Cixius* species under discussion.

SYSTEMATIC PART

Cixius (Tetracixius) pinivorus sp. n.
(Figs 10–19)

Holotype – Male: “SPAIN, Catalonia, Torreta de l’Orri, Portainé, 25.V.2001, leg. A. Orosz”.
Wing prepare No. 01–11–007.

Paratypes: two males, seven females, with the same data as the holotype.

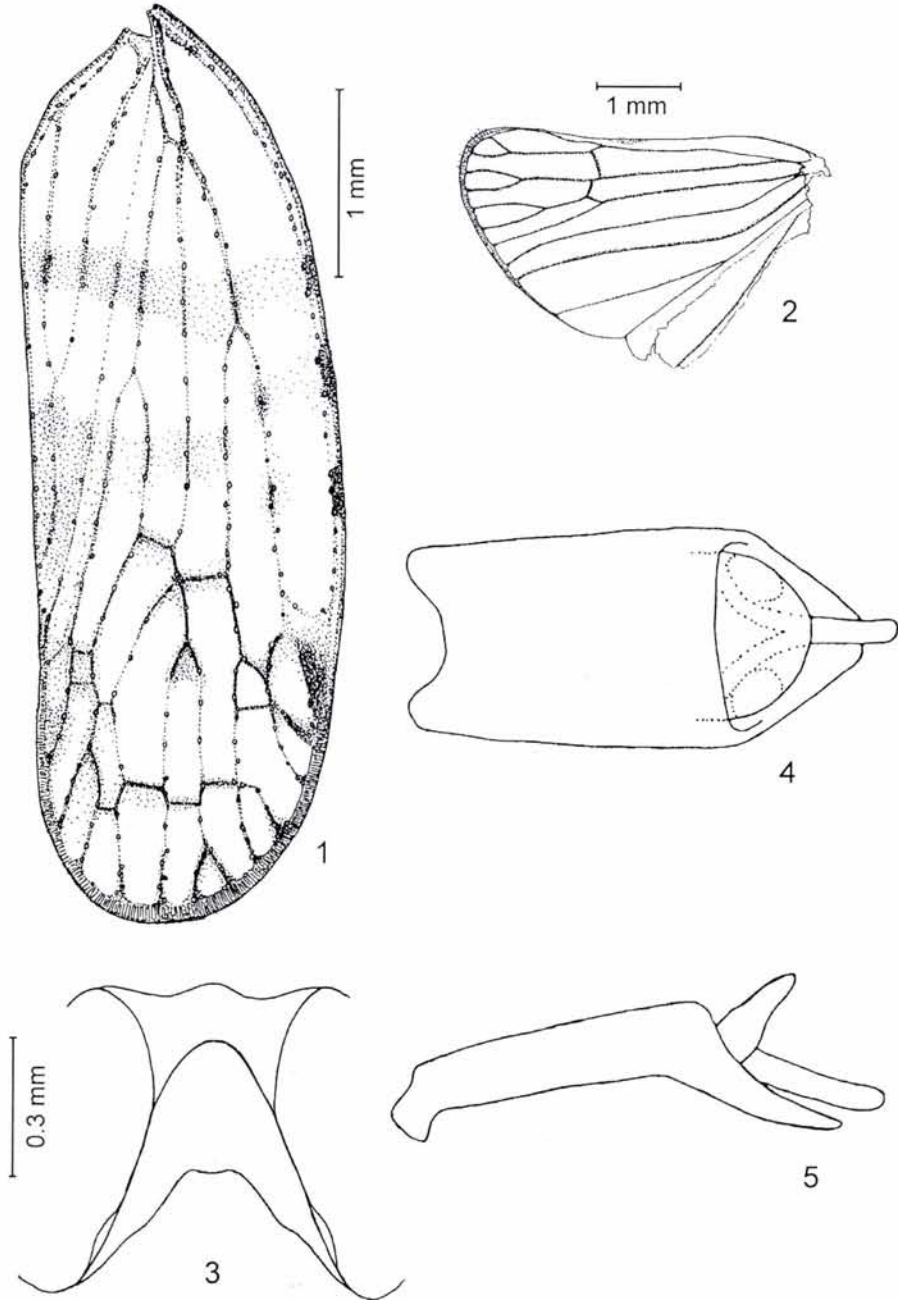
The holotype and seven paratypes are deposited in the Hemiptera Collection of the Hungarian Natural History Museum, Budapest, the remaining two paratypes (1 male, 1 female) enrich the collection of the Museum National d’Histoire Naturelle, Paris.

Description – External morphology. Measures: Body length from tip of head to tips of wings 5.64–5.68 mm (males), 6.6–6.92 mm (females); maximum body width on the abdomen 1.58–1.63 mm (males), 2.12–2.28 mm (females); fore wing length 4.8–4.84 mm (males), 5.56–5.92 mm (females); fore wing width 1.57–1.63 mm (males), 1.84–2.0 mm (females). The rate of the minimum width of vertex-frons transition (between the lateral carinas) and the maximum width of the frons is 1:2.34–2.42 in the males while this rate is 1:2.1–2.38 in the females.

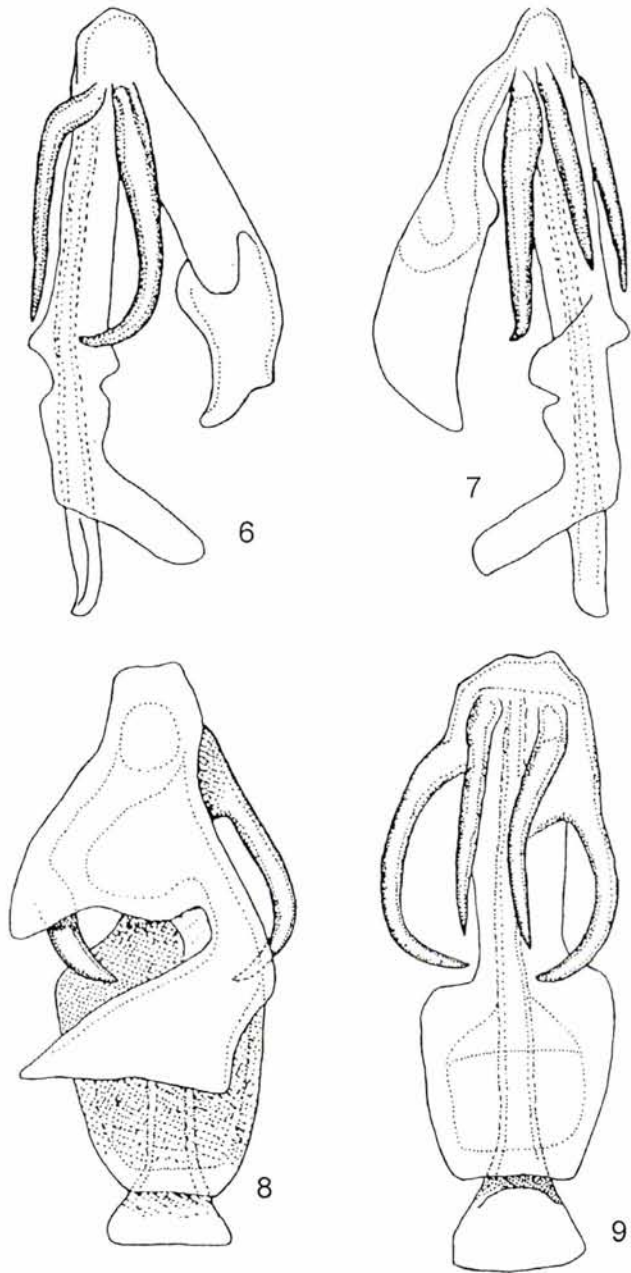
The frons is continued abruptly in the clypeus on the ventral side, the clypeus is not prominent; the medial and lateral carinas are well-developed. The pattern of this region is shown in Fig. 12. The area above the medial ocellus is conspicuously glossy black from a horizontal line towards the tip of the head, ochreous-brownish markings can be found only on the carinas and the frons-vertex transition. The edges of the carinas are dark brown or black. The areas between the epistomal suture and the lateral carinas are patternless white; the central section of the postclypeus and the entire anteclypeus ochreous-brown. The legs, the thoracic sternites and the abdomen are also ochreous-brown, without striking maculation.

The frons is tapering towards the tip of the head, the transitional part between the lateral carinas is about half as wide as the maximum width of the frons (see Fig. 12). The vertex is divided by a reversed V-shaped keel (Fig. 15), the ochreous-brownish ground colour is mottled by symmetrical dark brown spots along this keel. The pronotum is deeply incised medially in a sharp angle, the ground colour of the medial part is pale ochreous brown, the sectors below the eyes and the oblique lateral ridges are shining dark brown. The ridges of the mesonotum are well-developed, the medial part is pale ochreous brown, the lateral parts outside the ridges are dark brown.

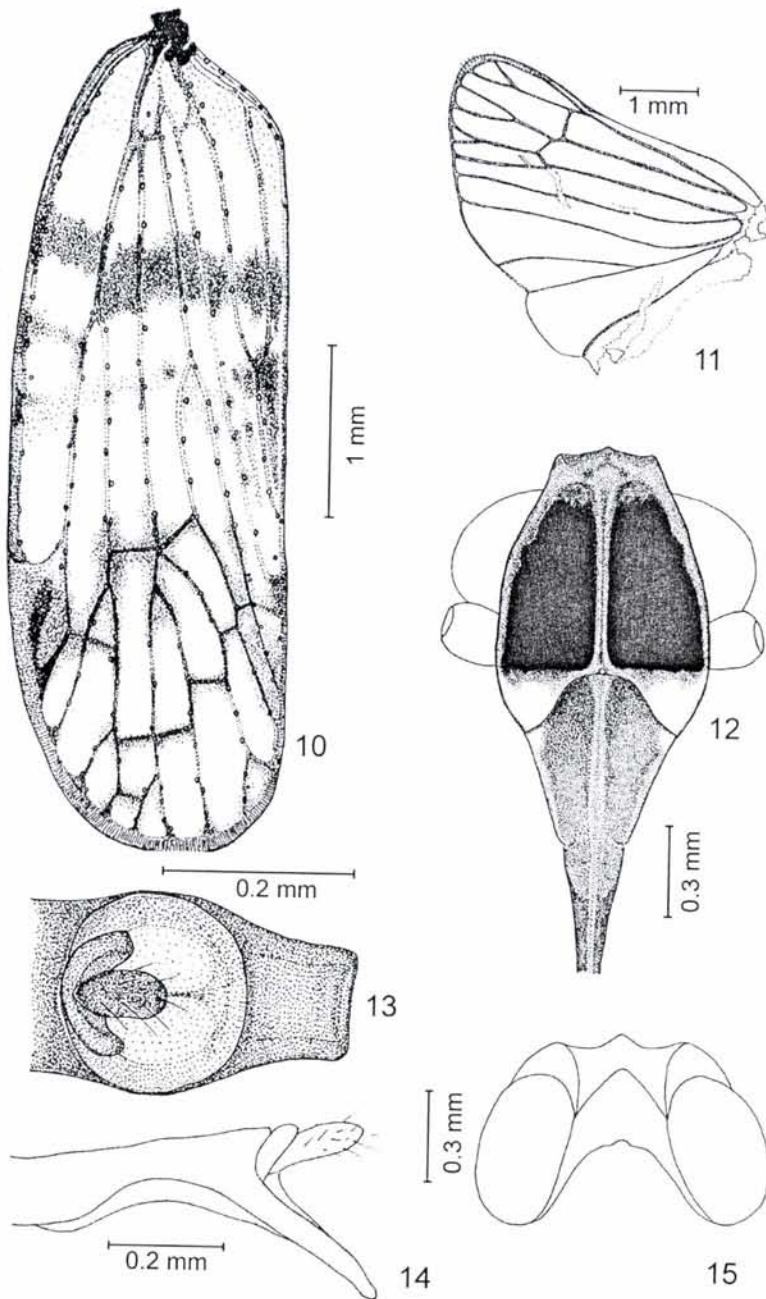
The first segment of the hind leg tarsus is armed with a crochet of eight spines, in the second segment the internal six spines are rudimentary while the two marginal spines are well developed. Some of the rudimentary spines (1–3, depending on the specimens) may be continued in a narrow, acute, spine-like black process.



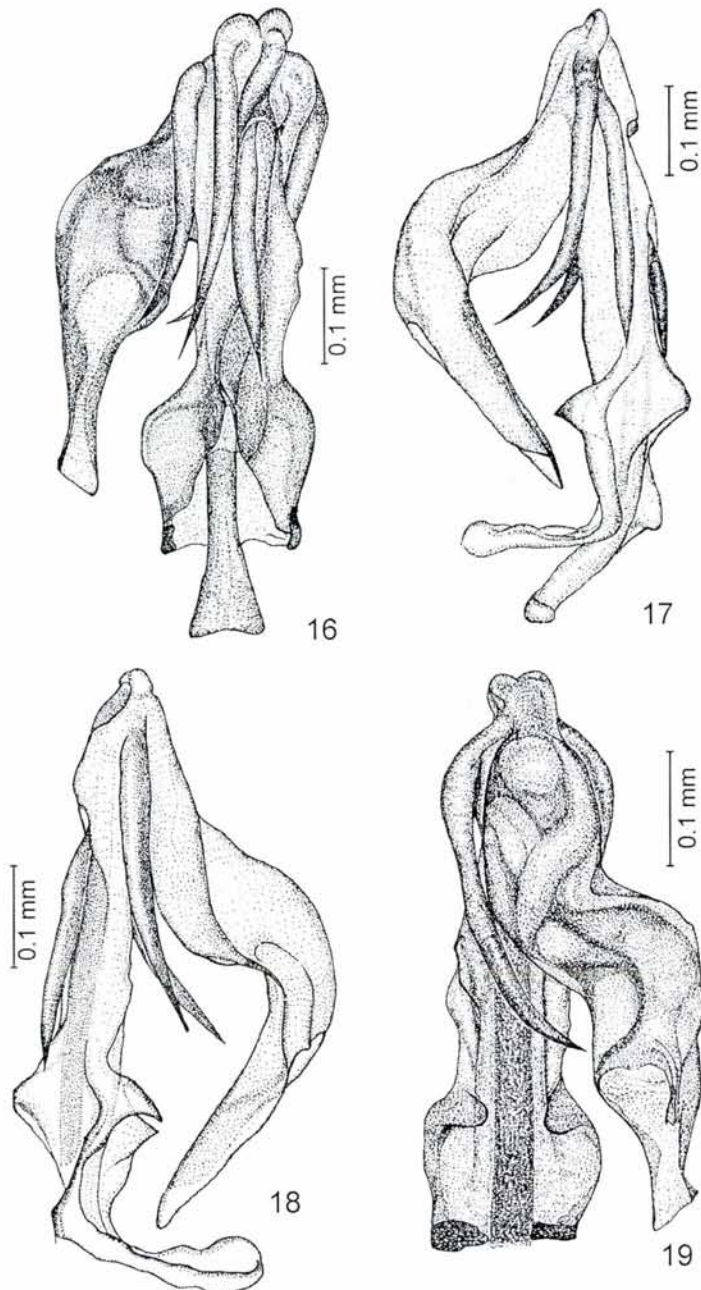
Figs 1–5. *Cixius (Tetracixius) lineolatus* Ribaut (1–3: holotype, original; 4–5: after Ribaut 1960) – 1: right fore wing, dorsal view; 2: left hind wing, dorsal view; 3: vertex, dorsal view; 4: anal tube, dorsal view; 5: anal tube, lateral view from the left side (the measures are not given in the drawings of Ribaut)



Figs 6–9. *Cixius (Tetracixius) lineolatus* Ribaut (after Ribaut 1960) – 6: aedeagus, ventral view; 7: aedeagus, lateral view from the left side; 8: aedeagus, lateral view from the right side; 9: aedeagus, dorsal view (the measures are not given in the drawings of Ribaut)



Figs 10–15. *Cixius (Tetracixius) pinivorus* sp. n. – 10: left fore wing, dorsal view; 12: frons and clypeus, ventral view; 13: anal tube, dorso-caudal view (the viewpoint is marked with an arrow in the Fig. 14); 14: anal tube, lateral view from the left side; 15: vertex, dorsal view



Figs 16–19. *Cixius (Tetracixius) pinivorus* sp. n. – 16: aedeagus, ventral view; 17: aedeagus, lateral view from the left side; 18: aedeagus, lateral view from the right side; 19: aedeagus, dorsal view. Measures – Figs 1–2, 10–11: 1.0 mm; Figs 3, 12, 15: 0.3 mm; Figs 13–14: 0.2 mm; Figs 16–19: 0.1 mm

The fore wings are transparent, the veins are paler or darker brown, with a variable number of dark brown granulae. The basal third is bordered with a conspicuous, partly interrupted, narrow, dark brown fascia, the apical third is marked by characteristic radiate (“stelliform”) veins (see the Fig. 10).

The hind wings with apical (outer) margin curved continuously inwards to the main axis of the body as far as the claval suture; the radial, medial and cubital (CU1) veins are with furcate apical parts (Fig. 11).

Male ano-genital complex (Figs 13, 14, 16–19) – The anal tube is somewhat asymmetric to its main axis, generally oar-shaped from a dorsal view (Fig. 13) with its apical part slightly tapering, but is not convergent into a pointed tip; its ventral surface is strongly arched from a lateral view (Fig. 14).

The ground plan of the aedeagus is typical of the genus, the details are illustrated in Figs 16–19. The apical part of the phallosome has four lateral movable spines, their length and shape are specific features. The ventral view of these extensions are shown in Fig. 16. The two lateral extensions are almost straight, their distal parts only slightly arcuate. The second extension from the right side in this view has a special configuration, covered partly by a wide lobe. The basal part of the phallosome has a “dome-like” prominence above the junction of the connectivum on the ventral surface (Fig. 16, below, at middle), while there are two symmetrical, pointed triangular lobes on the opposite (the dorsal) side (see the Figs 18, 19).

The main part of the movable portion of the aedeagus (“flagellum”) is located leftwards from the phallosome in a ventral view (Fig. 16), having only a slight submedial constriction, therefore the flagellum is not divided into two halves. The apical third of the flagellum is evenly tapering. The styli have no special features, their basal parts forming broadening triangles.

Females: The ovipositor is well-developed; the wax plate is slightly concave, medially undivided. The 8th gonocoxa are strongly built. The markings of the body and the wings are the same as of the males.

Diagnosis – The diagnostic features for the satisfactory separation of the two sister species, *C. pinivorus* sp. n. and *C. lineolatus* can be found in the anal-genital complex of the males, principally in the configuration of the anal tube and the aedeagus. In addition, there are numerous smaller or larger external morphological differences between the two species, therefore a detailed comparison of the distinctive characteristics is presented in the Table 1. This table was compiled using the original drawings of Ribaud (see Figs 4–9), and the results of the studies on the holotype of *C. lineolatus* (Figs 1–3) and the type series of *C. pinivorus* (Figs 10–19), respectively.

Table 1. Comparison of the distinctive characteristics of *C. (T.) pinivorus* and *C. (T.) lineolatus*

Character	<i>C. (T.) pinivorus</i>	<i>C. (T.) lineolatus</i>
Fore wing pattern	Strong, sharply defined at basal and apical thirds (Fig. 10)	Diffuse (Fig. 1)
Fore wing length/width	3.03:1	2.94:1
Furca of hind wing CU1 vein	Short, started close to margin of wing (Fig. 11)	Much longer, about half as long as CU1 vein itself
Vertex	With reversed V-shaped keel (Fig. 15)	With reversed parabolic keel (Fig. 3)
Vertex-frons transition minimum width/frons maximum width	1:2.375 (males, in average) 1:2.239 (females, in average) 1:2.741 (male holotype)	
Apical part of male anal tube	Oar-shaped, slightly asymmetrical (Fig. 13)	Convergent into a pointed tip, bilaterally symmetrical (Fig. 4)
Anal tube of male	Ventral part strongly arched from a lateral view (Fig. 14)	Ventral part slightly arched towards apical part (Fig. 5)
Apical extensions of phallosome	Lateral extensions almost straight, only weakly arched at distal third from ventral view (Fig. 16)	Lateral extensions strongly curved inwards (Fig. 6), right one (ventral view) with broad connecting part
Dorsal view of flagellum	Slightly S-shaped to right side, without stronger medial constriction (Fig. 19)	Medially strongly constricted, divided into two more or less triangular parts (Fig. 9)

Bionomics and distribution – The type series was collected in the western Pyrenees, eastwards from Rialp, in the vicinity of the village Portainé. The collecting site was about 1600 m a.s.l. where all specimens were beaten from the same pine tree (pine species, supposedly *Pinus halepensis*). No further specimens were beaten from the other pines of this area nor was found in the material netted from the herb-zone. These facts suggest that this *Pinus* species might be the foodplant of the new planthopper species. The small number of the specimens (altogether 10 examples) may refer to the rarity of the species.

The related *C. (T.) lineolatus* (the type species of the subgenus *Tetracixius*) is also a poorly known species. According to the literature (Ribaut 1960; Nast 1972: 17; 1987: 540, 627) it has only been found in the eastern Pyrenees (type locality: Vernet-le-Bains), the type series consists of only three specimens (1 male, 1 female, 27.IV.1959, 1 male, 3.V.1959, all specimens were collected by Dr Grave-

stein). The altitude of the type locality, according to the data of the map, is about 900–1000 m; the foodplant and the collecting method are unknown.

The distance of the two type localities is approximately 120 km, but they lie on the opposite sides of the main chain of the Pyrenees with 2500–3000 m altitude in average. These higher zones are far above the timberline, with pioneer rocky grasslands and nude stony walls and ravines. Thus the twin species have been evolved most probably from a common ancestor, as a consequence of the isolation of the formerly common area and the subsequent allopatric speciation. As the known material of the two species is very scarce, we have no information about the possible existence of populations with transitional morphological features. On the other hand, the type series of *C. (T.) pinivorus* is rather homogeneous, displaying only a small range of variation in the mentionable features.

Etymology – The specific name refers to the indepted foodplant of the taxon.

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Author's address: András OROSZ
Department of Zoology, Hungarian Natural History Museum
H-1088 Budapest, Baross u. 13.
Hungary
E-mail: orosz@zoo.zoo.nhmus.hu