

## Redescription of the little-known psyllid *Cacopsylla dissimilis* (Baeva, 1963) comb. nov. (Hemiptera: Psyllidae) from Iran

Mohammadreza Lashkari<sup>1,\*</sup>, Daniel Burckhardt<sup>2</sup> & Shahab Manzari<sup>3</sup>

1- Department of Biodiversity, Institute of Science and High Technology and Environmental Sciences, Graduate University of Advanced Technology, Kerman, IRAN, 2- Naturhistorisches Museum, Augustinerstrasse 2, CH-4001 Basel, SWITZERLAND & 3- Insect Taxonomy Research Department, Iranian Research Institute of Plant Protection, Agricultural Research, Education and Extension Organization (AREEO), Tehran, IRAN

\* Corresponding author, E-mail: m.lashkari@kgut.ac.ir

### Abstract

During a faunistic survey of the jumping plant-lice (Hemiptera: Psylloidea) in the Iranian province of Kerman in spring 2015, *Cacopsylla dissimilis* (Baeva) **comb. nov.** was collected on *Salix pycnostachya*. This species was previously known only from Tajikistan. It is reported here for the first time from Iran. The host species, *Salix pycnostachya*, is also newly recorded. We provide detailed morphological descriptions of adults and fifth instar immatures, and discuss differences to closely related species, in particular *Cacopsylla nigrita* (Zetterstedt).

**Key words:** Kerman, Palaearctic, *Cacopsylla nigrita*, *Salix pycnostachya*, description.

### بازتوصیف پسیل کمتر شناخته شده، *Cacopsylla dissimilis* (Baeva, 1963)

از ایران. **comb. nov. (Hemiptera: Psyllidae)**

محمدرضا لشکری<sup>۱\*</sup>، دانیل بورکهارد<sup>۲</sup> و شهاب منظری<sup>۳</sup>

۱- گروه تنوع‌زیستی، پژوهشگاه علوم و تکنولوژی پیشرفته و علوم محیطی، دانشگاه تحصیلات تکمیلی صنعتی و فناوری پیشرفته، کرمان، ایران، ۲- موزه تاریخ طبیعی باسل، سوئیس و ۳- بخش تحقیقات رده‌بندی حشرات، موسسه تحقیقات گیاه‌پزشکی کشور، سازمان تحقیقات، آموزش و ترویج کشاورزی، تهران.

\* مسئول مکاتبات، پست الکترونیکی: m.lashkari@kgut.ac.ir

### چکیده

طی مطالعه فونستیک پسیل‌ها (Hemiptera: Psyllidae) در استان کرمان در بهار ۱۳۹۴، گونه *Cacopsylla dissimilis* (Baeva) **comb. nov.** از روی درخت بید، *Salix pycnostachya* جمع‌آوری شد. این گونه قبلاً فقط از تاجیکستان گزارش شده بود و در این تحقیق برای اولین بار از ایران گزارش می‌شود. همچنین، گونه میزبان گیاهی آن، *Salix pycnostachya*، گزارش جدیدی محسوب می‌شود. ویژگی‌های ریخت‌شناختی حشرات بالغ و پوره‌های سن پنجم توصیف و تفاوت‌های موجود با گونه نزدیک به آن، *Cacopsylla nigrita* (Zetterstedt)، بحث شده است.

واژه‌های کلیدی: کرمان، پالئارکتیک، *Cacopsylla nigrita*، *Salix pycnostachya*، توصیف.

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## Introduction

*Cacopsylla* Ossiannilsson (Psyllidae: Psyllinae) is a large genus with over 450 described species (Ouvrard, 2017). The majority of species occur in the Holarctic region but there are also some species in the Oriental, Afrotropical and Neotropical regions. So far 12 species have been recorded from Iran (Burckhardt & Lauterer, 1993; Zendedel *et al.*, 2016): eight species from Rosaceae [*C. bidens* (Šulc, 1907), *C. crataegi* (Schrank, 1801), *C. notata* (Flor, 1861), *C. pruni* (Scopoli, 1763), *C. permixta* Burckhardt and Hodkinson, 1986, *C. pyri*

(Linnaeus, 1758), *C. pyricola* (Foerster, 1848), *C. pyrisuga* (Foerster, 1848)], two each from Rhamnaceae [*C. incerta* (Baeva, 1972), *C. suturalis* (Horváth, 1897)] and Salicaceae [*C. ambigua* (Foerster, 1848), *C. saliceti* (Foerster, 1848)] and one without known host [*C. iranica* Burckhardt and Lauterer, 1993]. The record of *C. pyricola* is almost certainly a misidentification of *C. bidens*, *C. permixta* or both.

The predominantly Holarctic genus *Salix* L. with around 400 species hosts a rich psyllid fauna, belonging to the genera *Cacopsylla* (about 100 species; Jensen, 1951; Loginova, 1967; Lauterer & Burckhardt, 1997; Ouvrard, 2017) and *Bactericera* Puton (Triozidae) (about 30 species; Burckhardt & Lauterer, 1997; Ouvrard, 2017). From Iran, in addition to the two *Cacopsylla* species, the following *Bactericera* species are associated with *Salix*: *B. albiventris* (Foerster, 1848) and *B. striola* (Flor, 1861).

During a recent faunistic survey in Kerman province, another *Salix*-feeding psyllid species, *Psylla dissimilis* Baeva, 1963, was discovered. The species was previously known only from Tajikistan (Gegechkori & Loginova, 1990). Here, we report the species for the first time from Iran and transfer it to the genus *Cacopsylla*. We also provide a redescription of the adult and, for the first time, a description of the fifth instar immature.

## Material and Methods

Adult psyllids were collected in the field on the plants using an aspirator. Immatures were collected on the leaves and later reared in the laboratory until the emergence of adults. The specimens are preserved dry mounted on pins, dissected and permanently mounted on microscopical slides or placed in 70% ethanol. The material is deposited in the following institutions: Graduate University of Advanced Technology, Kerman, Iran; Hayk Mirzayans Insect Museum, Insect Taxonomy Research Department, Iranian Research Institute of Plant Protection, Tehran, Iran; Naturhistorisches Museum Basel, Switzerland. Additional species were examined from the last mentioned institution.

Morphological terminology follows mostly Ossiannilsson (1992) and Hollis (2004). The nomenclature of plants accords with The Plant List (2013).

## Results

### *Cacopsylla dissimilis* (Baeva, 1963), *com. nov.* (Figs 1–5, 7–11)

*Psylla dissimilis* Baeva, 1963: 61; Baeva, 1985: 247.

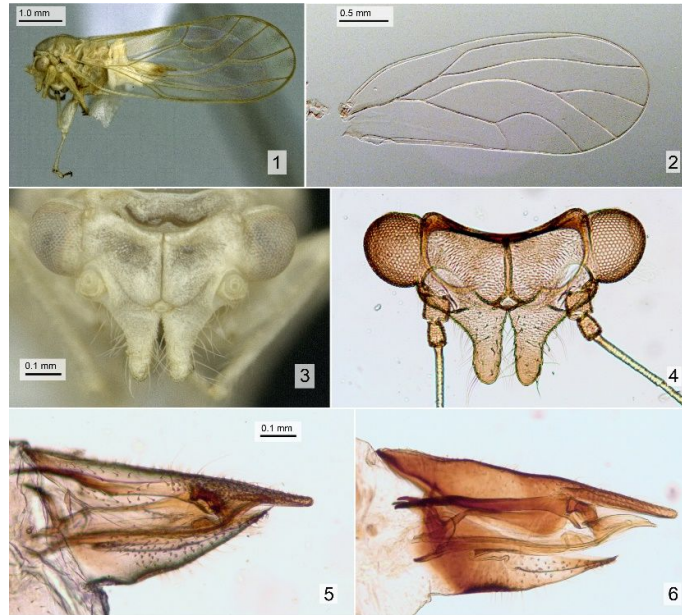
Material examined: IRAN: many and , Kerman province, Bardsir, Hararoon, N 29°29'5744", E 56°41'08", 2789 m, June 2015, *Salix pycnostachya* (M. Lashkari); 5 , 5 , same data but April 2016; 1 , 1 , same but Qaleaskar, N 29°29'44", E 56°41'08", 2628 m, June 2015 (dry and slide mounted, preserved in 70% ethanol).

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## Description

Adult. Colour: Body yellow to orange. Antenna yellow, segments 4–8 dark apically, segments 9 and 10 entirely black. Pronotum dark in front, mesopraescutum and mesoscutum sometimes with dark longitudinal stripes. Apical tarsal segments light brown. Forewing transparent, fore margin dirty whitish to yellow, the other veins brown. Terminalia ochreous; tip of paramere black; tip of female proctiger brown. Body of overwintered specimens orange to brown. Genal processes light brown with dark brown apex. Antenna light brown, segments 4–7 in apical part and entire segments 1, 2, 7–10 dark brown. Legs light brown, femora dark brown. Forewing membrane often slightly yellowish, veins pale yellow to light brown. Male and female proctiger dark brown. Abdominal tergites and sternites mostly brown, dark brown basally.

Structure: Body (Fig. 1) including folded wings 3.4–3.7 mm long. Head (Figs 3 and 4), in dorsal view, approximately as wide as thorax; in profile, strongly inclined downward; vertex trapezoidal, sparsely covered in microscopical setae; genal processes slightly longer than vertex along mid-line, axes subparallel, strongly narrowing in basal half, with subparallel margins in apical half, subacute apically, beset with long setae. Antenna 10-segmented, 1.41–1.45 times head width, with each a subapical rhinarium on segments 4, 6, 8 and 9; relative lengths of antennal segment 10, longer terminal seta and shorter terminal seta as 1.0: 1.1: 0.6. Rostrum short, tip hardly visible, in lateral view. Pronotum, in dorsal view, U-shaped; propleurites narrow with oblique suture. Metatibia 0.64–0.66 times as long as head width, with small basal spine and five (1+2+1+1) sclerotised apical spurs. Metabasisus with two lateral sclerotised spurs. Forewing (Fig. 2) oval, widest in apical third, around 4 times as long as head width, 2.51–3.21 times as long as wide; pterostigma long, slightly widened in the middle, then more or less evenly tapering to apex, ending above apical quarter of vein Rs; vein Rs weakly bent towards fore margin in the middle; cell  $m_1$  irregularly triangular; cell  $cu_1$  longer than high; surface spinules present in all cells, forming irregular squares or rhombs of 0.02 mm distance, leaving spinule free-stripes along the veins; fields of surface spinules not tapering towards apical wing margin. Hindwing slightly shorter than forewing. Terminalia as in Figs 5, 7–11. Male proctiger 0.47–0.59 times as long as head width, tubular, in profile, weakly sinuous. Male subgenital plate subglobular. Paramere, in profile, lamellar, truncate apically; outer face (Fig. 8) densely beset with long fine setae and inner face (Fig. 9) with bristles; apex forming small, forward directed tooth anteriorly. Distal portion of aedeagus (Fig. 10) long with sickle-shaped apical inflation; sclerotised end tube of ductus ejaculatorius short, weakly sinuous. Female terminalia (Fig. 5) cuneate; proctiger 0.52–0.65 times as long as head width, 3.10–4.00 times as long as circumanal ring, in profile with almost straight dorsal margin, 1.12–1.32 times as long as subgenital plate, with narrowly rounded apex; long setae forming an irregular longitudinal row on either side; apical half with densely set peg setae.



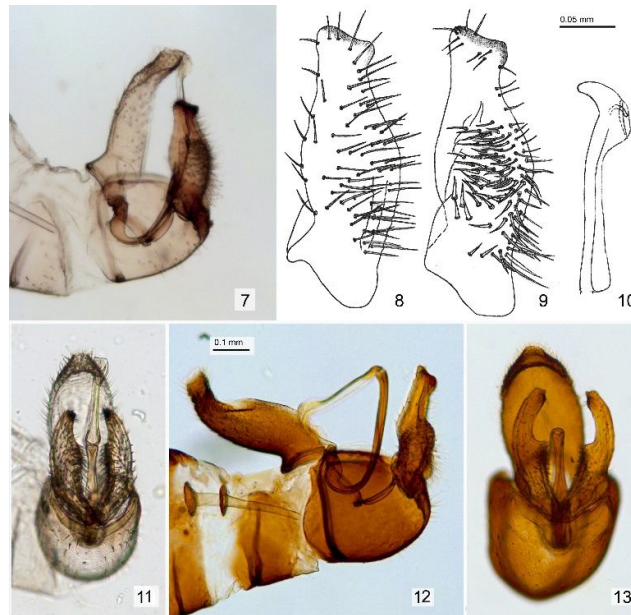
**Figs 1–6.** 1–5. *Cacopsylla dissimilis*: 1. habitus; 2. forewing; 3, 4. head, frontal view; 5. female terminalia. 6. *Cacopsylla nigrita*: female terminalia.

Measurements (in mm; 5 ♂, 5 ♀): head width 0.80–0.82; antenna length 1.14–1.21; forewing length 2.45–2.55; male proctiger length 0.38–0.47; paramere length 0.31–0.35; length of distal segment of aedeagus 0.20–0.25; female proctiger length 0.42–0.52.

Fifth instar immature. Colour: Body pale yellow. Eyes greyish. Antenna pale yellow, apex of segment 7 brown. Wing pads greyish apically.

Structure: Body strongly dorso-ventrally flattened, 1.09–1.10 as long as wide. Antenna 7-segmented, 1.18–1.20 times as long as forewing pad; with each a single rhinarium on segments 3 and 5 subapically, and two rhinaria on segment 7. Thoracic tergites small. Tibiae with a long fine capitate seta on outer margin subapically; tarsal arolium broadly fan-shaped on long petiole. Forewing pad elongate oval, margin with 9 long capitate setae and in each interval a short capitate seta. Hindwing pad margin with 2 long capitate setae. Abdomen with two large free tergites, each bearing 3–8 capitate setae. Caudal plate broadly rounded, 0.54–0.57 times as long as wide; margin with at least 9+9 capitate setae, lacking sectasetae, dorsum with about 10+10 capitate setae. Anus ventral. Outer circumanal ring comprised of a single row of pores; close to abdominal margin: distance between hind margins of circumanal ring and abdomen shorter than that between fore and hind margin of circumanal ring.

Measurements (in mm; 10 specimens): body length 1.30–1.38; body width 1.19–1.23; antenna length 0.78–0.84; forewing pad length 0.66–0.70; metatibiotarsus length 0.40–0.46; caudal plate length 0.48–0.55; caudal plate width 0.88–0.95; circumanal ring width 0.10–0.15.



**Figs 7–13.** 7–11. *Cacopsylla dissimilis*: 7. male terminalia, in profile; 8. paramere, outer face; 9. paramere, inner face; 10. distal portion of aedeagus; 11. male terminalia, in rear view. 12–13. *Cacopsylla nigrita*: 12. male terminalia, in profile; 13. male terminalia, in rear view.

### Distribution

*Cacopsylla dissimilis* has been reported only from Tajikistan (Gissar and Kuramin Ranges) (Baeva, 1963, 1985). This species is new to Iran and it is its first report from outside Tajikistan.

### Host plant

*Salix pycnostachya* Andersson (Salicaceae).

### Discussion

*Cacopsylla dissimilis* is similar to *Cacopsylla nigrita* (Zetterstedt, 1828), another species associated with *Salix* spp. *C. dissimilis* differs from *C. nigrita* in the absence of a dark stripe along vein  $Cu_{1b}$  in the forewing and details of the paramere. The apical half in *C. nigrita* (Figs 12 and 13) is more slender than in *C. dissimilis* (Figs 7 and 11). The female terminalia (Figs 5 and 6) and the immatures are similar in both species and probably not diagnostic as this is the case in many *Cacopsylla* species associated with *Salix*. *C. dissimilis* differs from the other two *Salix*-feeding *Cacopsylla* species reported from Iran, *C. saliceti* and *C. ambigua*, respectively, in shape of the paramere, from the latter also in the more spaced surface spinules of the forewing ( $2\text{--}10\ \mu$  in *C. ambigua* and  $20\ \mu$  in *C. dissimilis*).

Our study suggests that the Iranian psyllid fauna associated with *Salix* requires further research to improve its currently poor state of knowledge.

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