

RESEARCH PAPER

REDESCRIPTION OF FROGHOPPERS, *Cercopis intermedia* Kirschbaum, 1868 (HOMOPTERA: CERCOPIDAE) FROM ERBIL GOVERNORATE KURDISTAN REGION– IRAQ

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ABSTRACT

The present work includes a details description of froghoppers, *Cercopis intermedia* Kirschbaum,1868 from Erbil Governorate Kurdistan Region– Iraq. The specimens were collected from the wheat field and the flower of some weeds during the period of March to June- 2018. The taxon is easily distinguishable, where the antenna dark brown, filliform, flagellum is the smallest, 0.8 times as long as pedicel, basal body of the flagellum conic with an arista nearly 5 times longer than pedicel. Forewing black, with four dark red pattern. Pygophore which encloses two pairs of hook- like processes neighboring the hook shaped Aedeagus hook shaped, moderately thick, the blade bear four needle-like process. Some important body parts such as mouthparts, antenna, forewing and male genitalia were illustrated and drawn. Localities, date of collection and plant hosts were mentioned.

KEY WORDS: *Cercopis intermedia*, Description, (Homoptera:Cercopidae), Kurdistan region – Iraq.

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1. INTRODUCTION

Cercopidae belong to the suborder Auchenorrhyncha of the order Hemiptera which have piercing and sucking mouth parts style and feed on the xylem-sap of host plants, this family forms a large group of xylem feeding insects with approximately 1500 worldwide species included in 150 genera. Most species are distributed in the tropical and subtropical regions. Adults feed on leaves or stems of a wide variety of plants,

nymphs can feed on roots and in some cases they complete their development above the ground, the nymphs covered themselves with sputum produce frothy excreta which that serves as a means of protection and a means of reducing evaporation. Adults with bright color patterns ([Carvalho and Webb, 2005](#)).

, in the last revision lists 416 species collected in the New World, It is mostly tropical, with the exception of two species, *Prosapia bicincta* (Say,1830) and *Prosapia ignipectus* (Fitch,1851), founded in northern Mexico, two Genera, *Cercopis* Fabricius, 1775, and *Haematoloma* Haupt,1919, identified in Europe ([Carvalho et al., 2016](#), [Peck and Thompson, 2008](#)). The nymphs covered

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themselves with sputum produce frothy excreta which that serves as a means of protection and a means of reducing evaporation. Adults with bright color patterns (Carvalho and Webb, 2005). *C. intermedia* is one of the species of the *Cercopidae* collected on herbaceous plants in Antalya-Tukey, (Dmir,2919). Taxonomic works have often relied upon mainly superficial appearance, with the result that taxonomists have described and illustrated 10% of the species in sufficient detail, but tropical species are poorly known and in four Pacific island areas only 67 species from a 127 species were undescribed (Hamilton, 1980a,b; 1981 a,b and 2001).

These insects feed on shrubs, herbaceous plants and many other plants, some of them are economic importance because they cause plant dwarf especially clover plants (Johnson and Triplehorn, 2005, Demir, 2019). [Dolling \(1991\)](#) indicated that some species of froghoppers are polyphagous, feeding on grasses, broad-leaved weeds, and shrubs. Nymph are found in the soil cracks, under the stone ([Paladini and Carvalho, 2013](#)). [Hamilton and Morales \(1992\)](#) studied fifteen *Cercopidae* species belongs to four genera from New Zealand with keys for identifying the species. [Costes and Webb \(2004\)](#) indicated that four new species recorded in South America, which were described and illustrated withdrawing the male genitalia. [Dinardo-Miranda et al. \(2008\)](#) mentioned that sugarcane spittlebug, *Mahanarva fimbriolata* (Stål), is affected the sugarcane crop in Brazil, despite of its economic importance and reducing stalk productivity, ([Le Quesne, 1969](#)). [Holzinger \(2008\)](#) formulated a key to genera and species of the *Cercopidae* of Europe and gives an overview of the color morphs of Central European *Cercopis* taxa. In Iraq, the family isn't studied except ([Derwesh, 1965](#)) recorded *Triecphora septemmaculata* Mel., and ([Al-Hasnawy and Al-Asady, 2015](#)), described external morphology of a new record species of *Cercopis*

vulnerata (Rossi, 1807), male and female genitalia were discussed and illustrated.

MATERIALS AND METHODS

The specimens were collected by net from the period of March to June - 2018 on the flower of some weeds from different Erbil-Iraq localities Girderashe village, Mallow weed on 28 /3 /2018 and 2/4/2018; Ainkawa, wild mint on 15/4/2018; Hiran, Mallow weed on 7/5/2018; Shaqlawa, Hollyhock and Mallow weed on 5/6/2018; Shaqlawa:Kore village, wild mint on 25/6/2013; Khelifan, Mallow weed on 28/6/2018. The specimens separated to three parts; head, thorax and abdomen under dissecting microscope, Head and abdomen soaks in a beaker contained 10% KOH and placed on hotplate with shaking for about 10 minutes for dissolving lipids, After that placed in distilled water for 5 minutes in order to neutralize the alkali. The parts were placed in a glass petri dish containing an amount of ethyl alcohol 25% and dissected under microscope. Then the parts placed in ethyl alcohol, 50%, 75% and 100% for dehydration for 2 minutes, then they placed in xylol for 2 minutes ,for translucency then places on slides with a drop of dpx and covered by cover slides.; ([Mawlood et al., 2016](#)). The body and some photographs were taken using a Canon MP-E 65mm/ 2.8 1–5× Macro on bellows attached to a Canon Digital IXUS 9515 camera. The species was identified with the help of available literatures ([Le Quesne, 1969](#)). The specimens were deposited in the Insects Museum at the Department of Plant protection, College of Agriculture/ Salahaddin University, Erbil, Iraq.

RESULTS

Body (Pictures 1. a, b and c)

Oval, black with four red patterns on fore wing; Length 7.1-9.2 mm, width 3.0-4.2 mm.

Head

Semi-triangular shaped with width across eyes 1.3 times of pronotal length. Vertex and face

shinning black, smooth with fine pale pilosity. Fronto-clypeus strongly convex. Eyes black nearly spherical shaped; ocelli very small, reddish, 1.3-1.4 times as far from base of head, each other separated by 0.3-0.4 times their own width; Labrum triangular shaped with pointer apex. Mandibles (picture 2a) needle-like. Maxilla (picture 2b) needle-like slightly longer than the mandible; Labium (picture 2c) nearly tubular shaped, 2nd and 3rd segment are the same length and longer than the 1st segment. Antenna (picture 2 c) dark brown, filliform, 1st segment cylindrical, 1.1 times as long as the 2nd segment, 2nd segment nearly rectangular, 2.1 times as long as the 3rd segment, arista nearly two times as long as the 3rd segment.

Thorax

Pronotum smooth, shining black with high dense of short yellow setae and fine shallowly punctures, the anterior margin straight width 1.7-1.8 mm. Scutellum triangular, shiny black. Forewing (Fig. 1E) black, with four dark red patterns and fine pale pilosity. Hind wings translucent, smoky brown, with fine pilosity. Vein Cu1 not thickened at the base, r-m situated at 0.65 length, m-cu at 0.55 length, proximal costal process at 0.20 length. fore legs red-black, fore coxae and trochanter black, fore femur cylindrical, the basal half is black and the apical half is red, fore tibia black tubular shaped with length slightly less than twice that of femur, 1/5th of apical is red bearing a pair of short spurs with 9-10 apical spines; Tarsus black with four segments, metatarsus with apical spines obscured by long setae; Mid legs nearly similar to fore leg; hind legs resemble to forelegs except the coxal plate shaped, the tibia tubular with two spines at the antero-dorsal margin.

Abdomen

Composed of seven visible red-black segments, length is 5.2- 6.3 mm, surface covered with moderate dense of black setae. The sternites red with black spot, 1st - 6th tergites rectangular.

7th sternite oval. The tergites narrowly reddish posteriorly. (picture 3 a)

Male genitalia

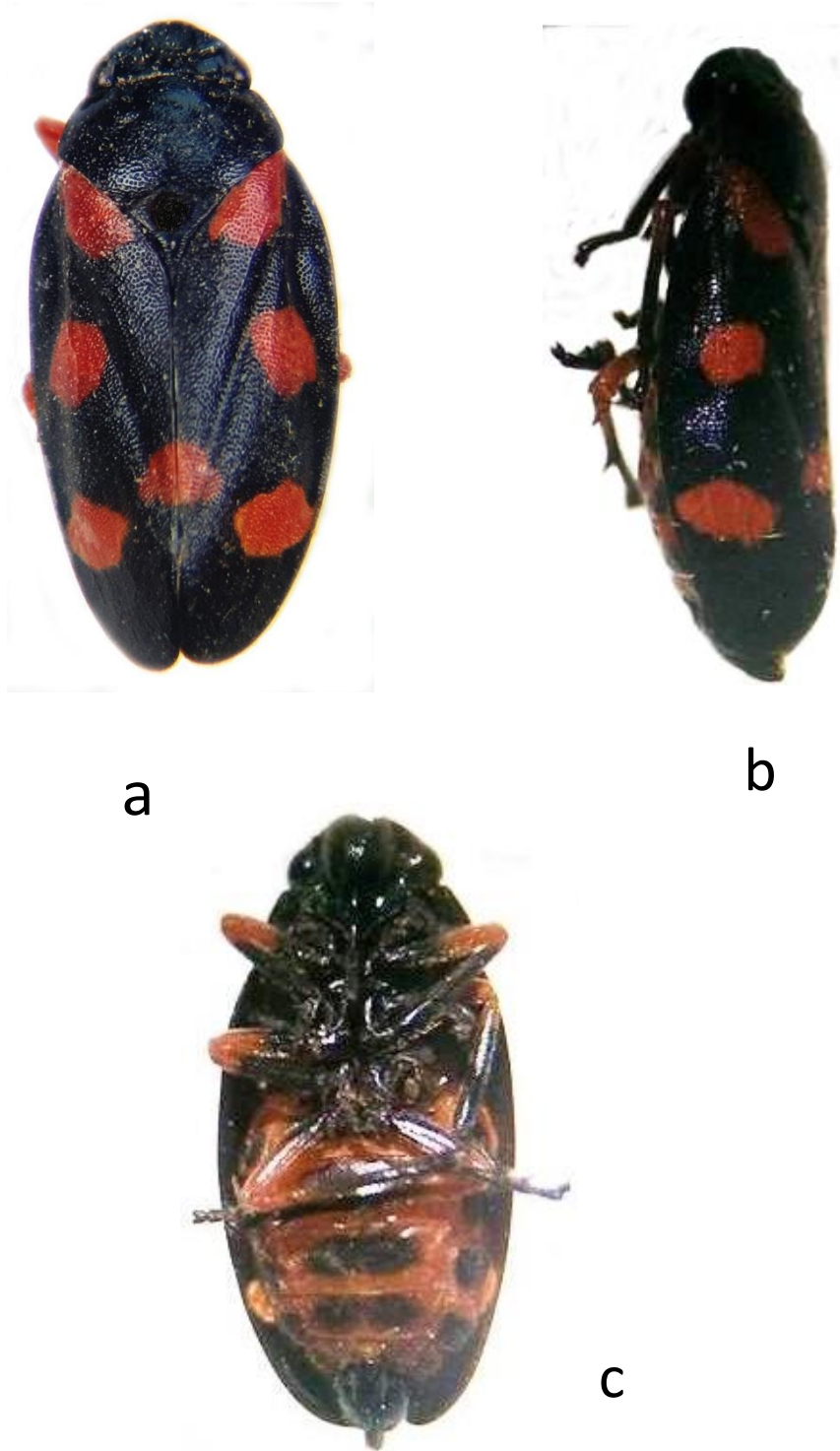
The 8th abdominal segment (picture 3a) nearly ovoid, highly sclerotized, laterally covered with moderate dense of short, brown setae. The genital capsule, Pygophore (picture 3a) encloses two pair of hook-like styles neighboring the penis nearly cup shaped, anterior margin slightly concave, prominent at the middle, half of anterior part highly sclerotized, basal half membranous, laterally with moderate dense of short, brown setae. Subgenital plates (picture 3 e) which are short pair of blunt or tapered, nearly cylindrical shaped processes serve to protect the copulatory apparatus and arise from the ventral margin of the pygophore and form the side walls of the genital capsule, these plates are highly sclerotized, covered with high dense of short, brown setae. Parameres (picture 3 b) irregular shaped, with short swollen apical process. Above the aedeagus the slender terminal segments of the abdomen form anal tube. Aedeagus (picture 3 f) hook shaped, moderately thick. The blade bear four needle-like process, two of these are long, the penis divided into a globular phallobase and a distal, tubular or leaf-like aedeagus, which in turn may be composed of a sclerotized theca ending in a membranous, often extensile vesica surrounding the gonopore.

Female genitalia

Ovipositor yellow, composed of four long, slender styles bent at the middle, toothed dorsally, blunt, knife-like process, length 0.8-0.9 mm.

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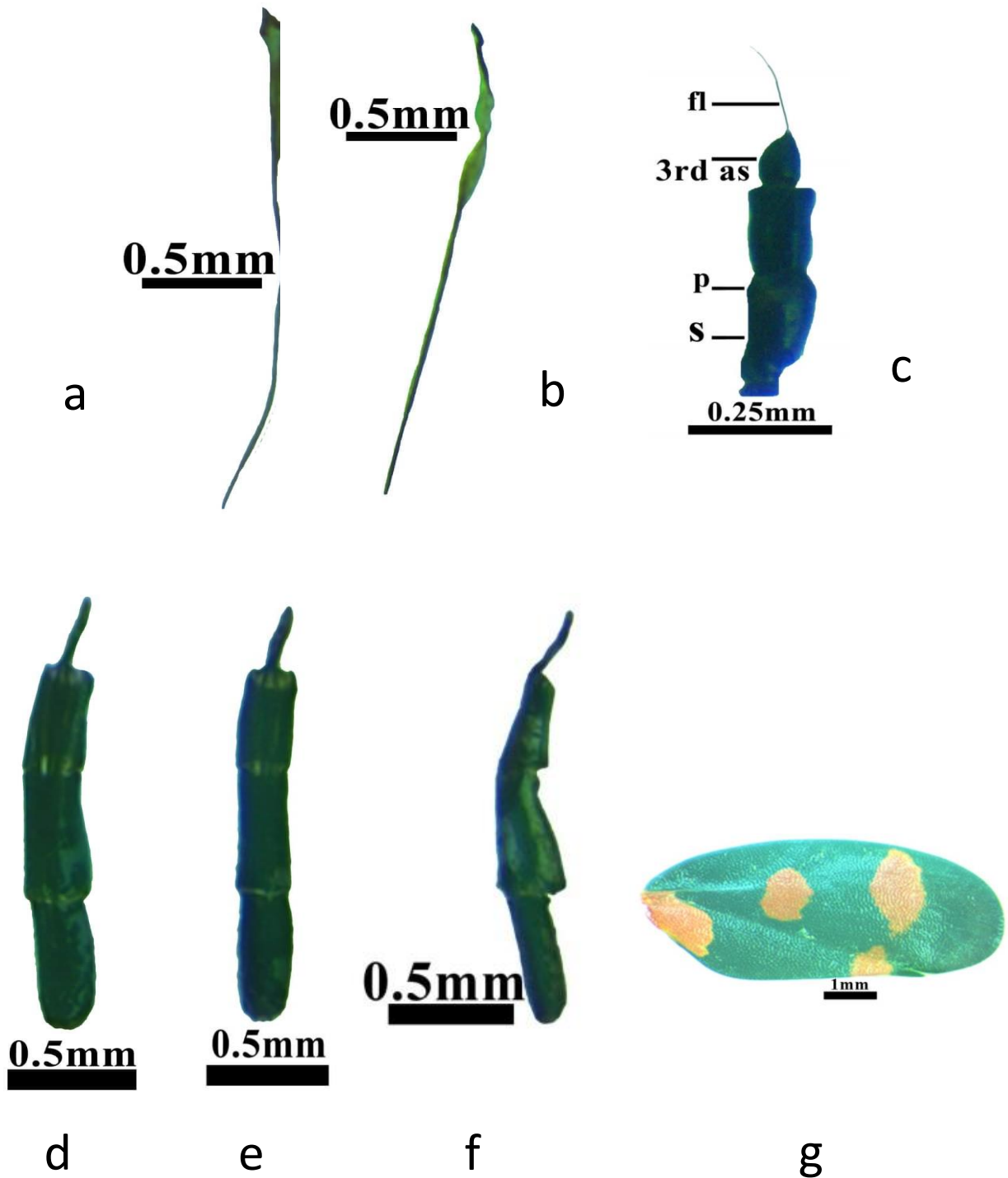


Picture 1. Adult of *Cercopis intermedia* Kirschbaum, 1868 (10 X)

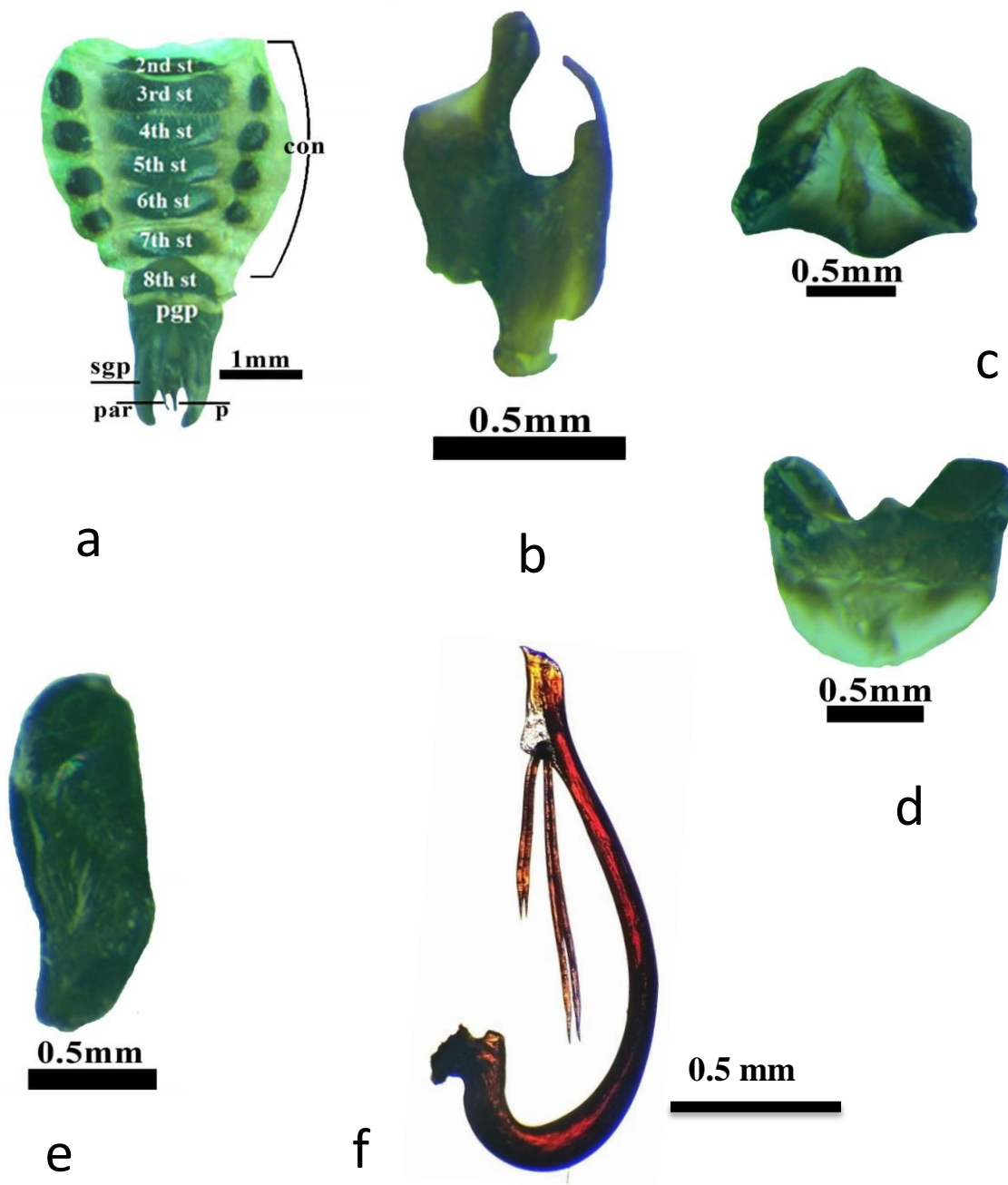
a. Dorsal view

b. Lateral view

c. Ventral view



Picture (2) Mouth Parts, Elytra of *Cercopis intermedia*
 a. Mandible ; b. Maxilla ; c. Antenna; d. Labium (Dorsal view); e. Labium (Ventral view);
 f. Labium (Lateral view) ; g. Elytra ; 3rd as. 3rd antennal segment; fl :Flagellum; p. pedicel ;
 s. Scape;



Picture (3) a. Male Abdomen (Ventral View); b. Paramere (Lateral view); c. . Pygophore (Dorsal view);d. Pygophore (Ventral view);e. Subgenital plate; f. Aedeagus-penis
 2nd: second sternites; P. Penis; Par: Paramere; pgp: Pygophore; Sgp: Subgenital plate

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