

Short Paper

First record of *Aconurella nuristana* Dlabola (Hemiptera: Cicadellidae) from Iran

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Abstract: A faunistic survey was conducted to identify the leafhoppers in the southwest of Iran (Khouzestan Province) in 2014. Among the collected materials, *Aconurella nuristana* Dlabola, 1957 is recorded for the first time for Iranian leafhoppers fauna. Diagnostic characters and geographical distribution of the newly recorded species is presented briefly.

Keywords: Leafhopper, First record, Citrus orchards, Dezful, Khouzestan

Introduction

Based on the number of described species, Cicadellidae, commonly called leafhoppers, is the largest family of the suborder Auchenorrhyncha with approximately 20,000 described species; making Cicadellidae one of the 10 largest families of insects, yet many new species are being discovered each year (Dietrich, 2005). Leafhoppers are recognized by the presence of rows of spine-like setae on their hind tibiae (Anufriev and Emeljanov, 1988). They are usually found feeding on the stems or leaves of plants (Nickel, 2003). Leafhoppers are diverse and abundant components of tropical, subtropical and temperate forest ecosystems, but they are possibly best known for their diversity and abundance in grasslands. In grasslands, leafhoppers are among the most numerically abundant and species-rich groups of herbivores (Hamilton, 1975; Whitcomb *et al.*, 1987).

The genus *Aconurella* Ribaut, 1948 belongs to the subfamily Deltocephalinae and tribe

Chiasmini with 22 described species. Most of them occur in the Palaearctic region (Zahniser and Dietrich, 2013). Of this genus, only *Aconurella prolixa* (Lethierry, 1885) has been recorded up to now from different provinces of Iran (e.g. Alborz, East Azerbaijan, Kerman, Khouzestan, Tehran and Sistan and Balouchestan provinces) (Dlabola, 1960; 1971; Mirzayans, 1995). *Aconurella nuristana* Dlabola, 1957 has been recorded only from Afghanistan (Dlabola, 1957) and this is a new record for the Iranian leafhopper fauna. According to existing data, this genus may be found in sunny, dry to damp, occasionally also moist on acidic to basic substrates like abandoned fields, mining areas, along waysides and on inland dunes. Most populations apparently live on *Plantago lanceolata* and *P. major*, but various dicotyledonous herbs have been reported as additional hosts from laboratory rearing (Fischer, 1972; Remane, 1987; Reimer, 1992; Nickel and Achtziger, 1999). As part of our ongoing research on leafhoppers fauna in Khouzestan province, *Aconurella nuristana* Dlabola, 1957 was collected and identified. The validity of this species was confirmed by Dr. Michael R. Wilson (National Museum of Wales, UK).

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Materials and Methods

Specimens were collected by standard sweeping net from citrus orchards in southwest Iran (Khouzestan province) in 2014. Species were identified according to the keys of Ribaut (1952), Dlabola (1957, 1960, 1971), Anufriev and Emeljanov (1988) and Zahniser and Dietrich (2013). Materials were killed in a standard insect killing jar containing ethyl acetate and mounted on points. Finally specimens were sorted and labeled. All specimens are deposited in the Insect Collection of Jalal Afshar Zoological Museum at University of Tehran.

Results

As a result of this study, *Aconurella nuristana* Dlabola, 1957, is recorded for the first time from Iran., Geographical distribution and morphological characters of the species are presented.

Genus: *Aconurella* Ribaut, 1948

Type species: *Thamnotettix prolixa* Lethierry, 1885

Diagnostic characters: Size: 1.8–3.1 mm; moderately sturdy, terete; vertex projecting forward, rounded triangular, its turn into face smooth. Male: Pygofer with more or less denticulate processes on posterior margin, dorsal margin often spinulate; genital plates with concave lateral margin and attenuate apices, few bristles in marginal row; connective with long base and long branches, apices of branches approximated; styli with well expressed subapical angle and rather short apical part, which is more or less parallel to their posterior margin; penis shaft articulated movably with base. Female: Pygofer with reduced macrosetae; ovipositor protruding far beyond pygofer apex; first valvula not strongly convex, dorsal sculpturing pattern granulose.

Aconurella nuristana Dlabola, 1957 (Fig. 1)

Material examined: Iran, Khouzestan province, Dezful, citrus orchards, 32°20'34.9" N, 48°30'73.8" E, 127m, 4♂, 3♀, Sep. 2014; leg. F. Pakarpour.

Distribution: Afghanistan (Dlabola, 1957; Nast, 1972; Zahniser and Dietrich, 2013), Iran (new record).

Diagnosis:

Head: Head wider than pronotum, discal portion of crown rugose or punctate, anterior margin of head irregularly textured, clypellus parallel sided, lorum subequal to clypellus, antennae short, less than 1.5x width of head, ocelli present on anterior margin of head or on crown.

Thorax: Pronotum not exceeding eyes anteriorly, lateral margin not carinate and shorter than basal width of eye.

Wings: Forewing macropterous with 3 anteapical cells, without reflexed costal veins, A1-A2 crossvein absent.

Male genitalia: Lobes of pygofer with bristles and teeth on hind margin (Fig. 2 A). Genital plates with 4 bristles in a marginal row (Fig. 2 A). Aedeagus without basal hinge, with a single shaft and gonopore (Fig. 2 B).

Discussion

Aconurella nuristana lives on bushy weeds in open and sunny environment. Although *A. nuristana* is very similar to *A. prolixa*, there are some characteristics with reduced variability that can easily distinguish these two species. *Aconurella nuristana* is generally smaller than *A. prolixa* but the most evident characteristic is the length/width ratio of the head. In both males and females of *A. prolixa*, the head is 1.7–2.3 times longer than broad and extends in front of the eyes. The characteristic shape of the aedeagus is very important for diagnosis as well. Up to now it seems that the *A. nuristana* is a species which is present only in Afghanistan. It may be replacing *A. prolixa* geographically in southern parts of Iran where *A. nuristana* had not been recorded before this survey. *Aconurella prolixa* seems to be a species complex rather than one single species and morphological differences concerning the appearance and size of the body in specimens from Palearctic and Afrotropical regions. Further studies are required on specimens named *A. prolixa* from the borders of its distribution area to define its real distribution and clarify the possible existence of *A. nuristana* in these territories. According to Dlabola (1957), *A. nuristana* can be distinguished from other *Aconurella* species by the size and special defined characteristics of the male genitalia specially the shape of aedeagus.



Figure 1 *Aconurella nuristana* Dlabola, 1957, dorsal view of male.

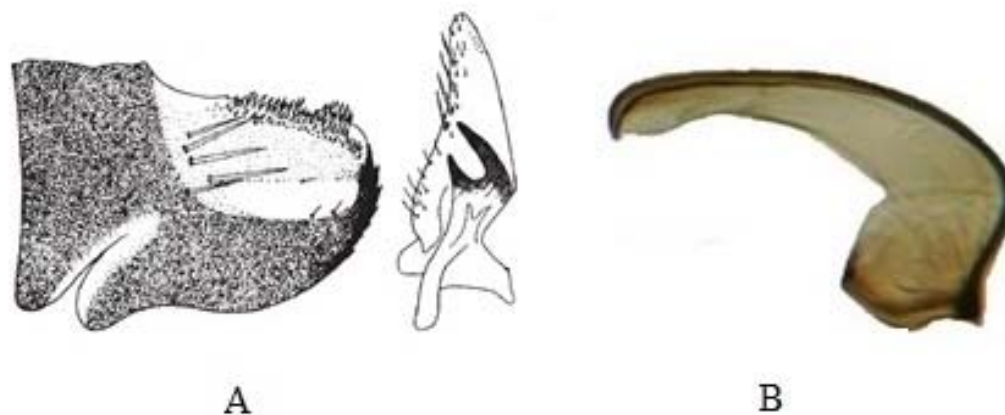


Figure 2 A) lobes of pygofer and genital plates in *Aconurella nuristana*, B) lateral view of aedeagus.

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References

- Dietrich, C. H. 2005. Keys to the families of Cicadomorpha and subfamilies and tribes of Cicadellidae (Hemiptera, Auchenorrhyncha). *Florida Entomologist*, 88 (4): 502-517.
- Dlabola, J. 1957. Die Zikaden Afghanistans (Homoptera, Auchenorrhyncha). *Entomologische Gesellschaft*, 48: 265-303.

- Dlabola, J. 1960. Iranische zikaden (Homoptera: Auchenorrhyncha). *Acta Entomologica Musei Nationalis Pragae*, 20 (509): 317-352.
- Dlabola, J. 1971. Taxonomische und Chorologische Ergänzungen zur Türkischen und Iranischen Zikadenfauna (Homopt, Auchenorrhyncha). *Acta Faunistica Entomologica Musei Nationalis Pragae*, 14 (163): 115-137.
- Anufriev, G. A. and Emeljanov, A. F. 1988. Suborder Cicadinea (Auchenorrhyncha)-cicadas. In: Lera, P. A. (Ed.), *Key to the Identification of Insects of the Far East USSR. Vol. 2 Homoptera and Heteroptera*. Leningrad, Nauka Publishing House, pp. 12-495.

- Fischer, H. 1972. Die Tierwelt Schwabens. 21. Teil: Die Zikaden. Bericht der naturforschenden Gesellschaft Augsburg, 27: 103-143.
- Hamilton, K. G. A. 1975. A review of the Northern hemisphere Aphrodina (Rhynchota: Homoptera: Cicadellidae), with special reference to the Nearctic Fauna. The Canadian Entomologist, 107: 1009-1027.
- Mirzayans, H. 1995. Insects of Iran, The list of Homoptera: Auchenorrhyncha in the Insect Museum of Iranian Research Institute of Plant Protection Iran, 63 pp.
- Nast, J. 1972. Palaearctic Auchenorrhyncha (Homoptera): An Annotated Checklist. Institute of Zoology, Polish Academy of Sciences, Polish Scientific Publisher, Warsaw.
- Nickel, H. 2003. The Leafhoppers and Planthoppers of Germany (Hemiptera, Auchenorrhyncha): Patterns and Strategies in A Highly Diverse Group of Phytophagous Insects. Co-published by Pensoft Publishers, Sofia-Moscow Goecke and Evers, Keltern.
- Nickel, H. and Achtziger, R. 1999. Wiesen bewohnende Zikaden (Auchenorrhyncha) im Gradienten von Nutzungsintensität und Feuchte. Beitr Zikadenkunde, 3: 65-80.
- Remane, R. 1987. Zum Artenbestand der Zikaden (Homoptera: Auchenorrhyncha) auf dem Mainzer sand. Mainzer Natural Arches, 25: 273-349.
- Reimer, H. 1992. Beiträge zur Zoogeographie und Ökologie von Zikaden (Homoptera: Auchenorrhyncha) in Mittelgebirgen am Beispiel der Rhon. Ph. D. Dissertation, University of Marburg. 252 pp.
- Ribaut, H. 1952. Homopteres Auchenorrhynques, II (Jassidae), Faune de France 57. Paul Lechevalier, Paris.
- Witcomb, R. F., Kramer, J. P., Coan, N. E. and Hicks, A. L. 1987. Ecology and evolution of leafhopper-grass host relationships in North American grasslands. Current Topics in Vector Research, 4: 125-182.
- Zahniser J. N. and Dietrich, C. H. 2013. A review of the tribes of Deltocephalinae (Hemiptera: Auchenorrhyncha: Cicadellidae). European Journal of Taxonomy, 45: 1-211.

اولین گزارش زنجرک (*Aconurella nuristana* Dlabola (Hemiptera: Cicadellidae) از ایران

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چکیده: در طی نمونه برداری هایی که در سال ۱۳۹۳ در استان خوزستان به منظور بررسی فون زنجرک های خانواده Cicadellidae صورت پذیرفت در میان نمونه ها گونه *Aconurella nuristana* Dlabola, 1957 جمع آوری و مورد شناسایی قرار گرفت. این گونه برای اولین بار از ایران گزارش می شود. ویژگی های مهم ریخت شناسی و پراکنش جغرافیایی این گونه به صورت مختصر ارائه می شود.

واژگان کلیدی: زنجرک، گزارش جدید، باغ های مرکبات، دزفول، خوزستان