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Records of leafhoppers (Cicadellidae) of mekran division, Balochistan, Pakistan

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Abstract

Studies on leafhoppers of Mekran division of Balochistan was conducted during 2012-16, total 12 different species of leafhoppers were diagnosed under 3 subfamilies; deltocephalinae, megophthalminae and typhlocybinae. Seven species of deltocephalinae; *Goniagnathus quadripinnatus* Dash and Viraktamath 2001, *Neolimnus egyptiacus* (Matsumura, 1953), *Aconurella prolixa* (Lethierry, 1885), *Balclutha incisa* (Matsumura, 1902), *Stirellus lahorensis* (Distant 1918), *Maiestas indicus* (Pruthi, 1936), *Exitianus indicus* (Distant 1908). Three species of megophthalminae; *Austroagallia robusta* Sawai Singh and Gill 1973, *Austroagallia sarobica* Dlabola 1964, *Platyproctus maculatus* (Pruthi, 1930). Two species of typhlocybinae; *Zyginidia quyumi* (Ahmed, 1969), *Amrasca biguttula* (Ishida, 1912) were discovered.

Keywords: mekran, leafhoppers, jassids, preliminary checklist

1. Introduction

Leafhoppers are also commonly known as jassid and sharpshooters and belong to family cicadellidae. Their size ranges between 2-10 mm, they are recognized by having rows of spines on hind tibia. Oman ^[1] described 49 subfamilies of the cicadellidae. From Pakistan several workers conducted work on typhlocybinae, recently studies on deltocephalinae, megophthalminae and idiocerinae is also available ^[3, 6, 7].

From Pakistan mostly the leafhoppers have been identified from Sindh, Punjab and Sarhad, but the leafhopper fauna of Balochistan is still unexplored, keeping in view the importance of the study area; Mekran division is selected for study. Balochistan is the largest (48%) of Pakistan and expanded on an area of 134,051 square kilometers, Mekran is located in the south and Kallat in center, zoogeography of Balochistan consists of Palaearctic and Ethiopian influence. Mekran Division is an administrative division of the Balochistan Province of Pakistan, districts of Mekran Division include Gwadar, Turbat and Panjgur. It is semi-desert coastal strip in the south of Sindh and Balochistan. Better understanding might contribute to the solution of the problems of an economic nature.

In present study various localities of Mekran division were visited for collection of leafhoppers, most of the collection was done on vegetation and through light traps. Since this work is the first attempt of the area and will add future workers for understanding the leafhopper fauna of the region.

2. Materials and Methods

For present studies leafhoppers were collected from various localities of Mekran division, the map of study area is given below. Leafhoppers were collected through sweeping vegetation with muslin sweep net and from the light trap. Specimens were killed in a bottle containing potassium cyanide and also preserved in 80-90% ethanol, specimens were labelled with the information containing data on locality, date, collector and host plant if known. For the confirmation of specimens upto species level, male genitalia was dissected, the method of dissection was followed as described by, knight ^[2]. Specimens were observed under microscope and necessary pictures were captured.



Map of the Study Area

3. Results

In present study a total of 12 leafhoppers were explored under 3 subfamilies; deltocephalinae, megophthalminae and typhlocybinae from the Mekran division. Seven species of deltocephalinae; *Goniagnathus quadripinnatus* Dash and Viraktamath 2001, *Neolimnus egyptiacus* (Matsumura, 1953), *Aconurella prolixa* (Lethierry, 1885), *Balclutha incisa* (Matsumura, 1902), *Stirellus lahorensis* (Distant 1918), *Maiestas indicus* (Pruthi, 1936), *Exitianus indicus* (Distant 1908). Three species of megophthalminae; *Austroagallia robusta* Sawai Singh and Gill 1973, *Austroagallia sarobica* Dlabola 1964, *Platyproctus maculatus* (Pruthi, 1930). Two species of typhlocybinae; *Zyginidia quyumi* (Ahmed, 1969), *Amrasca biguttula* (Ishida, 1912). Each specimen is provided with the taxonomic hierarchy and material examined and each specimen is provided with their habitus image.

Order: HEMIPTERA, Linnaeus 1758

Suborder: AUCHENORRHYNCHA, Duméril 1806

Subfamily: DELTOCEPHALINAE, Fieber 1869

Tribe: GONIAGNATHINI, Wagner 1951

Genus: *Goniagnathus*, Fieber 1866

Goniagnathus quadripinnatus Dash and Viraktamath 2001 (Plate 1a)

Material examined. Pakistan: 2♂, 1♀, Balochistan Prov., Panjgur, 12.iv.2013, Rehmat, light trap. Sindh Prov., Tandojam, 28.iv.07. I. Khatri (IKC)

Tribe: ATHYSANINI, Van Duzee 1892

Genus: *Neolimnus*, Linnavuori 1953

Neolimnus egyptiacus (Matsumura, 1908) (Plate 1b)

Material examined. Pakistan: 3♂, 5♀, Balochistan Prov., Gwadar: Ormara, 20.vi.2013, Rehmat, light trap. Sindh Prov., 1♀, Hub, 17.iv.87; 1♂, 1♀, Tharparkar, 12.xi.07, I. Khatri (IKC).

Tribe: CHIASMINE, Distant 1908

Genus: *Aconurella*, Ribaut 1948

Aconurella prolixa (Lethierry, 1885) (Plate 1c)

Material examined. Pakistan: 5♂, 3♀, Balochistan Prov., Panjgur, 25.vii.2013, Rehmat, light trap; 1♂, Gwadar: Suntesar, 17.viii.2013, Ali, light trap. 2♂ Sindh Prov., Tandojam, 12.iv.09, light trap; 5♂, 23♀, Mithi, 7.viii.07 (IKC).

Tribe: MACROSTELINI, Kirkaldy 1906

Genus: *Balclutha* Kirkaldy, 1900

Balclutha incisa (Matsumura, 1902) (Plate 1d)

Material examined. Pakistan: 3♂, 9♀, Balochistan Prov., Gwadar, 9.vii.2013, Rehmat, light trap. Several specimens both ♂,♀, Sindh Prov., Tandojam, 05.viii.02; 5♂, 8♀; I. Khatri, rose; (IKC).

Tribe: STENOMETOPIINI, Baker 1923

Genus: *Stirellus*, Osborn and Ball 1902

Stirellus lahorensis (Distant 1918) (Plate 1e)

Material examined. Pakistan: 1♂, 2♀, Balochistan Prov., Turbat, 3.vii.2013, Rehmat, light trap. 8♂, 10♀, Sindh Prov., Tandojam, 22.vii.07, from paddy.

Tribe: DELTOCEPHALINI, Fieber 1869

Genus: *Maiestas*, Distant 1917

Maiestas indicus (Pruthi, 1936) (Plate 1f)

Material examined. Pakistan: 2♂, 6♀, Balochistan Prov., Mand, 21.iv.2013, Rehmat, light trap.

Tribe: CHIASMINE, Distant 1908

Genus: *Exitianus*, Ball 1929

Exitianus indicus (Distant 1908) (Plate 1g)

Material examined. Pakistan: 3♂, 2♀, Balochistan Prov., Gwadar: Pasni, 13.vii.2013, Rehmat, light trap. 8♂, 16♀, Sindh Prov., Tandojam, 22.vii.07, I. Khatri, Paddy (IKC).

Subfamily: MEGOPHTHALMINAE, Kirkaldy 1906

Tribe: Unassigned

Genus: *Austroagallia*, Evans 1935

***Austroagallia robusta* Sawai Singh and Gill 1973 (Plate 1h)**

Material examined. Pakistan: 1♂, 1♀, Balochistan Prov., Panjgur, 8.iv.2013, Rehmat, light trap. Pakistan: 6♂, 32♀, Sindh Prov., Tandojam, 10.xi.07, I. Khatri (IKC).

***Austroagallia sarobica* Dlabola 1964 (Plate 1i)**

Material examined. Pakistan: 2♂, 4♀, Balochistan Prov., Panjgur, 16.x.2013, Rehmat, light trap. 2♂, 4, Sindh Prov., Tharparkar, 6♂, 11♀, 12.xi.07, I. Khatri (IKC).

Tribe: ADELUNGIINI, Baker 1915

Genus: *Platyproctus*, Lindberg 1925

***Platyproctus maculatus* (Pruthi, 1930) (Plate 1j)**

Material examined. Pakistan: 4♂, 1♀, Balochistan Prov., Panjgur, 3.x.2013, Rehmat, light trap. 4♂, 2♀, Sindh Prov., Tandojam, 18.viii.08, A. Behan (IKC).

Subfamily: TYPHLOCYBINAЕ, Kirschbaum 1868

Tribe: ERYTHRONEURINI, Young 1952

Genus: *Zyginidia*, Haupt 1929

***Zyginidia quyumi* (Ahmed, 1969) (Plate 1k)**

Material examined. Pakistan: 1♂, Balochistan Prov., Panjgur, 3.viii.2013, Rehmat, maize. Pakistan: 1♂, Sindh Prov., Tandojam, 5.viii.2007, I. Khatri, Wheat (IKC).

Tribe: EMPOASCINI, Distant 1908

Genus: *Amrasca*, Ghauri 1967

***Amrasca biguttula biguttula* (Ishida, 1912) (Plate 1l)**

Material examined. Pakistan: 9♂, 6♀, Balochistan Prov., Panjgur, 7.iii.2013, Rehmat, tomato. Several specimen (♂, ♀), 28.iii.2007, I. Khatri, Okra (IKC).

4. Discussion

The present work was aimed to document the leafhoppers of Mekran division Balochistan, for which leafhoppers were collected from various habitats and on light traps. Species identification was confirmed with the identified leafhopper material deposited at insect museum at Sindh Agriculture University Tandojam, Pakistan; and available keys for material under study. Subfamily deltocephalinae constitutes a major portion of the collection. *Neolimnus egyptiacus* (Matsumura) was identified based on the figures, provided by Khatri and Webb [3].

The host records could be real hosts or casual resting hosts, as some species of leafhoppers are found on a number of hosts but might be breeding on only selective hosts. Available host records in literature, for our identified specimens are presented here: Most of the deltocephaline leafhoppers were grass feeding, but one species *Amrasca biguttula* was noxious pest of our agricultural crops including; okra, chilies, tomato etc. another species *Zyginidia quyumi* was also recorded on wheat crop.

From Pakistan *Aconurella* Ribaut was first time recorded by Khatri and Webb [3]. Previously described species *Chiasmus karachiensis* and *C. lobata* described by Ahmed *et al.* [8],

which were synonymised by Khatri and Webb [3] under *A. prolixa*, as the pygofer comb is the prominent feature of this genus. *Exitianus indicus* (Distant) is very widely distributed on grasslands of Pakistan, many previously described species under the genus including; *E. minor*, *E. karachiensis* and *E. peshawarensis*. *E. minor* were later synonymised by Khatri and Webb [3]. *Maiestas* Distant have been treated by Webb and Viraktamath [4], many previously described species under *Deltocephalus (Recilia)* Edwards are placed under the genus. Genus *Balclutha* Kirkaldy 1900 was revised for the Oriental region by Webb and Vilbaste [5], previous *Balclutha modesta* recorded from Pakistan was synonymised by Khatri and Webb [3] under *Balclutha insisa*, similarly two species *Stirellus peshawarensis* Mahmood *et al.* and *Paternus jhokensis* Ahmed and Aziz were also synonymized under *Stirellus lahorensis* (Distant). Typhlocybinae the family of small and delicate leafhoppers revealed only two species; *Zyginidia quyumi* *Amrasca biguttula* from Mekran.

5. Conclusion

From present study it was concluded that enough diversity of leafhoppers is available in Mekran, including three subfamilies; deltocephalinae, megophthalminae and typhlocybinae. Images provided for 12 species may be helpful for the diagnosis of these species found in Mekran, Balochistan.

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