

## Three New Records of Crickets (Gryllidae; Orthoptera) from Hyderabad, Sindh-Pakistan and Its Adjoining Areas

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### Abstract:

*The studies on recording three new cricket species from District Hyderabad-Sindh and its adjoining areas revealed that 10 genera and 15 species belonging to 2 sub-families of main family Gryllidae were identified throughout the period under study. Out of these 15 species, 3 species such as, Acheta thoracica Saeed, Phonarellus minor Chopard, Modicogryllus baroculus Saeed were recorded as first time in selected areas.*

**Key words:** Gryllidae, genera, *Acheta thoracica* Saeed, *Phonarellus minor*, *Modicogryllus baroculus* Saeed.

### Introduction

Crickets are metropolitan insects and are notorious pest of various agricultural crops such as cotton, rice, millets etc. They are also found as predators and helpful in biological control strategy (Saeed, 2000). Crickets occur in terrestrial habitats

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throughout the world. They can even be found in remote places like the Galapagos Islands. Crickets belong to family Gryllidae and are most diverse in the tropics. This large family includes about 3,000 species worldwide, but only about 100 live in the U.S. and Canada. True crickets undergo simple, or incomplete metamorphosis, with three life stages: egg, nymph, and adult. The females typically oviposit in the soil, or insert her eggs into plant stems. Most crickets overwinter in the egg stage. Depending on the species, the nymph may molt 6-12 times before reaching adulthood. Adult crickets usually live up to two months.

Crickets are closely related to grasshopper and katydids. They are nocturnal, medium to large size insects; body is flat and famous for their loud chirping. Antennae are as long as length of the whole body. Cerci are present in males as well as in females. Female is distinguished from the male by the presence of long, slender ovipositor through which females lay eggs in soil. Crickets feed on organic material as well as with the help on decaying plants and seedling plants. They live indoors as well as outdoor, in the house under the ceiling, in kitchen cabinets, in moist and damp places. Outside they can be found in leaf litter under the logs and rocks, in grasses, in go downs etc. A very interesting behavior of cricket is its noise, which male produce by rubbing their forewing to attract females. Female respond the chirping sound by the tympanic membrane present on front leg. Interestingly the chirping sound is different for each species so that is why acoustic behavior for their identification. They have positive impact on the ecosystem it helps in the renewing of soil minerals by breaking down the plant material its negative impact is that it is a serious pest of crops and household things. Climatic conditions of Pakistan are favorable for the insect population. Being an agricultural country Pakistan's main economy relies on agricultural crops and these crops are under continuous attacks of insects pests. This causes a great damage to our

economy that affects the living standards of common people. For the pest control pesticides are used to increase our yield, but the residues of pesticide have harmful effects on biotic components of our environment.

In Pakistan, cricket fauna have been identified by (Ghouri and Ahmed, 1959; Chopard, 1969; Yunus *et al.*, 1980; Ramzan, 1984; Qayoom *et al.*, 1987; Abdullah, 1995 and Saeed, 2000) but most of the workers collected material from Punjab, as far as Sindh concerned only references of Karachi, Badin and Sukkur can be found in the literature. However, regarding the identification of crickets of Sindh is very limited. Therefore the present study was designed to survey and identify new record cricket species of Hyderabad and its adjoining areas.

## **Materials and Methods**

The study on finding new records of cricket fauna was carried out in District Hyderabad-Sindh and its adjoining areas during 2014. Regular survey was carried out to find crickets in house kitchens, go downs, bakeries, undersides of rocks, inside grasses, upon litters and on lights at night. They were also collected from cultivated crops like wheat, cotton and vegetables such as Okra, chili etc. Crickets were collected from Hyderabad District and its neighbor areas like Qasimabad, Latifabad, Kotri, Tandojam, Jamshoro, Mirpurkhas, Tandoallahyar and Husri.

For the proper identification of cricket species, the basic standard Entomological procedures and tools were followed.

## **Results**

The studies on recording three new cricket species from District Hyderabad-Sindh and its adjoining areas revealed that 10 genera and 15 species belonging to 2 sub-families of main family Gryllidae were identified throughout the period under

study. Out of these 15 species, 3 species such as, *Acheta thoracica* Saeed, *Phonarellus minor* Chopard, *Modicogryllus baroculus* Saeed were recorded as first time in selected areas. The details of identified species from Hyderabad District and its adjoining areas like Jamshoro, Tandojam, Mirpur Khas, Kotri and Husri localities are shown below:

Pronotal marking dark, extending to the anterior margin, epiphallus trilobite dorsally ----- *Acheta thoracica* Saeed et al.

Body thin and small; ovipositor moderately long, 0.7 times as long as posterior femora----- *Phonarellus minor* Chopard.

Occiput with 6 yellow lines, elytra sinuate, epiphallus with U-shaped posterior emargination-----*Modicogryllus baroculus* Saeed et al.

These above facts are the key points of recording new species in this study.

### 1. *Acheta thoracica* Saeed et al.

#### Diagnosis

**MALE:** Medium size. Body is brownish—yellow and depressed. Head blackish—brown in coloration, a narrow yellow band between lateral ocelli, other band on the vertex, face dark in color, maxillary palpi yellowish, last segment of palpi darkened, antennae brown. Pronotum 0.51—0.60 times as long as broad, transverse, its posterior margin straight, anterior margin concave, disk flat, two large dark brown spots on piriform impression, lateral lobes yellow, with a broad band in superior part. Legs covered with pubescence; anterior tibiae with external and internal tympanum, posterior tibiae with 6-8 external and 6—7 internal spines. Elytra extending to the apex of abdomen, mirror wide divided by curved vein, harp with

oblique veins, long apical field with regular reticulation, lateral field transparent, pale, subcosta 3—4 branched. Wings are long, longer than elytra. Abdomen is yellowish in beneath and brown from above. Cerci are long and hairy. Sub genital plate compressed near the tip; epiphallus trilobed, lateral projection shorter than median one.

### **Female:**

Females resemble with male except the following characters: Elytra with oblique, regularly spaced veins, Cu 5—branched, numerous transverse vein lets the female to enlarge, regular reticulation. Ovipositor long, straight, pointed apical valves.

### **Material Examined:**

Hyderabad 2♂♂, 7♀♀ 9-IX-2009 (S.Malik); Jamshoro 5♂♂, 3♀♀ 14-IX-2009 (T.J.Chandio); Qasimabad 1♂, 2♀♀ 7-VII (Neelam); Tandojam 2♂♂, 3♀♀ 10-IX-2010 (T.Qureshi); Mirpurkhas 3♂♂, 4♀♀ 26-IX-2010.

## **2. *Phonarellus minor* Chopard.**

The *P.minor* specimens confirmed the published description of (Chopard, 1969, Saeed and Yousuf, 1990), except in the following characters. Body is entirely black; antennae with or without whitish segments, 4—6 veins in the apical field of the male elytra.

### **Diagnosis:**

General coloration black; head shining black, antennae dark, in the middle segment with whitish yellow ring, eyes black; celli arranged in the straight line, yellow in coloration, last segment of maxillary palpi dark; Pronotum blackish in color, posterior margin concave, a row of bristles is present, rounded corners; legs yellowish, front tibiae with oval tympanum, hind femora

black, hind tibiae with 4—5 spines, basitarsus long with 6---8 internal 5—7 external denticles; wings long; abdomen black, cerci brown in colour; ovipositor medium in size with pointed apical valves.

**Material Examined:**

Hyderabad 05♂♂, 11♀♀, 8-VIII-2009 (S.Malik); Tandojam 02♂♂, 3♀♀, 11-VIII-2009 (T.Qureshi); Mirpurkhas 04♂♂, 08♀♀, 20-VIII-2009 (A.Rehman); Jamshoro 4♂♂, 6♀♀, 2-IX-2009 (T.J.Chandio) Qasimabad 03♂♂, 07♀♀, 18-IX-2009 (Neelam).

**3. *Modicogryllus baroculus* Saeed et al.**

**Diagnosis:**

**MALE:** Size is medium. Body is black tapering, posteriorly. Head shining black, occiput have 6 yellow stripes, face black, clypeo—frontal suture straight, eyes black, maxillary palpi yellowish in coloration 3<sup>rd</sup> and 5<sup>th</sup> segment longer than 4<sup>th</sup> one, last segment darkened and truncate at apex, antennae brown in color. Pronotum is broader than long, its posterior margin straight, anterior concave having dense rows of bristles, disk black yellow and dark spots present on posterior half, lateral lobes black. Legs are yellow in coloration, anterior tibiae perforated with internal and external tympanum; posterior femora longer than elytra, posterior tibiae have 6 external 5 internal spines. Elytra is a little shorter or extending to the apex of the abdomen dark brown in coloration, mirror longer than wide divided in the middle by a curved vein, chords bent, 3-4 veins in apical field, lateral field transparent with widely spaced veins. Wings are caudate. Abdomen is black from above, yellowish from beneath. Cerci are brownish-black Genitalia epiphallus having shallow anterior, and widely U—shaped posterior emargination, ecto parameres curved upwards.

**FEMALE:** It is similar to male except the following characters, Pronotum is with sinuate posterior margin. Elytra are slightly longer than femora, 3 free veins in the dorsal field; numerous cross veins, lateral field having distant 4 veins. Wings are small.

Ovipositor is long and straight, apical valves narrow and acute at apex.

**Material Examined:**

Hyderabad 7♂♂, 5 ♀♀ 11-VIII-2011; Tando Allahtar 3♂♂ 2 ♀♀16-VIII-2011 (A. Rehman Azeemi); Hyderabad 1♂ 2♀♀ 14-VII- 2010 (S.Malik); Latifabad 3♂♂ 4♀♀ 20-IX-2010 (Talat); Husri 1♀ 3-X-2010 (Niaz); Jamshoro 1♂ 2♀♀ 10-X-2010



*Acheta thoracica* Saeed, male



*Modicogryllus baroculus*, male



*Phonarellus minor* Chopard, male

**Fig. 1** Three new cricket species were identified first time in the Hyderabad and its surrounding areas.

**Discussion**

The present study was carried out to record some new species of crickets in different areas of Sindh. Results showed that that almost 15 cricket species were observed in all areas. The study further ensured that out of these 15 species, 3 species such as, *Acheta thoracica* Saeed, *Phonarellus minor* Chopard, *Modicogryllus baroculus* Saeed were recorded as first time in selected areas. However, almost all species were seen in Hyderabad District. The study also showed that crickets were present in almost every place that was surveyed including field crops and vegetables. Present study However, Chopard (1969) described species belong to 12 families of Grylloidea from Pakistan and adjacent countries. Bhowmik (1971); Tandon and Shishodia (1972); Vasanth *et al.*, (1975) identified several new species of family Gryllidae from India. Latif and Asghar (1957); Ghouri and Ahmed (1959); Ramzan (1984); Qayoom *et al.* (1987) Saeed and Yousuf (1990); Abdullah (1995); Saeed (2000) identified crickets fauna of Pakistan but most of the workers collected material from Punjab, as far as Sindh concerned only references of Karachi, Badin and Sukkur can be found in the literature.

## **Conclusion**

The present study concluded that three new cricket species were identified first time in the Hyderabad and its surrounding areas. Crickets were observed in most of the areas including Hyderabad District. Crickets were also found on every place that was surveyed in this study.

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