RESEARCH ARTICLE

STUDY ON THE ORIENTAL MOLE CRICKET, GRYLLOTALPA ORIENTALIS (ORTHOPTERA: GRYLLOTALPIDAE: GRYLLOTALPINAE).

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Abstract

Oriental mole cricket, Gryllotalpa orientalis Burmeister, 1838 is described from Pakistan. Morphological characters along with photographs is provided. The finding of present study aims to help with this species identification and will help future taxonomists concerned with biodiversity of this group from this region.

Introduction: -

Bajour Agency is located at the exciting end of the Himalayan Range that makes variations and uncertainty in the monsoon rains from month to month and year to year. However, because of its peculiar geographical position it gets its share of rains with winter and spring rains being more predictable than rains at other times of the year. It is major agricultural sector within the FATA (Federally Administered Tribal Area) and provides an ideal situation for breeding of insects (Ali et al., 2017).

The mole crickets belong to Grylloidea group and family Gryllotalpidae with 08 genera and approximately 100 species (Cigliano et al., 2016). These insects adapted to live underground, with reduced ovipositor, fore legs vastly modified for digging and hind legs fully losing their jumping capability during the ontogenesis (Gorochov, 1995). Genus Gryllotalpa was established by Latreille in 1802 with type species Gryllus (Acheta) gryllotalpa and is characterized by having the fore tibiae with four dactyls (Chopard, 1968; Townsend, 1983; Ma & Zhang, 2011). Nearly 100 species have been recognized including a single extinct species (Cigliano et al., 2016). Of which 26 species of Gryllotalpa mole crickets are recorded from Oriental region. 05 species i.e: Gryllotalpa orientalis, G. hirusta, G. minuta, G. ornata and G. africana have been reported from Indian subcontinent (Chandra, 2011).

Several studies have been conducted on the mole cricket, Gryllotalpa by (Chopard, 1968; Townsend, 1983; Rongcai, 1993; Gorochov, 1995; Brandenburg et al., 2002; Kim et al., 2005; Ingrisch et al., 2006; Endo, 2006, 2007; Jin, 2008; Ma & Zhang, 2011; Chandra et al., 2011; Park & Lee, 2012; Cadena-Castaneda, 2015a,b) from different parts of world including Indian subcontinent. Although the Orthopteroid insect fauna of Pakistan, including the Bajour Agency have been well known, numerous faunistic and taxonomic confusion remain and most of them discourse one of the most fragmented known groups i.e: crickets. In the earlier studies, Tettigonids and Acridids received the chief attention, while the Grylloids were neglected due to their nocturnal habitat. The finding of present
study aims to help with this species identification and will help future taxonomists concerned with biodiversity of this group from this region.

**Materials and Methods:**
During field studies, adult oriental mole crickets, *Gryllotalpa orientalis*, were collected from different localities of Bajour Agency during the year 2016-2017 from moist ground, preferably near water basis. The easiest and effective way was the collection of specimens through mercury vapor light lamps. The collected specimens were killed and preserved in insect’s cabinets. The morphological characteristics of specimens were measured or countered using a digital camera attached to a Optica SZM-SMD stereo microscope and photographed using a Nikon camera.

Identification was done by available literature. Examined specimens in this study were deposited in Insect Museum Department of Zoology, Hazara University Mansehra Pakistan.

Figure 1. *Gryllotalpa orientalis* Burmeister, 1838: a, Habitus dorsal view; b, Pronotum dorsal view; c, Tegmen dorsal view
Results and Discussion: -
Taxonomy: -
Family Gryllotalpidae Leach, 1815
Subfamily Gryllotalpinae Leach, 1815
Tribe Gryllotalpini Leach, 1815
Genus *Gryllotalpa* Latreille, 1802

Type species: - *Gryllus (Acheta) gryllotalpa* Linnaeus

Diagnosis. Fore tibiae with four dactyls. Tympanum covered and opening in form of a slit. Basal spur of fore leg arising from femur. Veins in lateral field of fore wings pointing towards wing tips.

*Gryllotalpa orientalis* Burmeister, 1838

Figure. 1 (a,b,c)

Material examined. FATA. Bajour Agency: Village Kousar, Khar, Salarzo, Nawgai, Mammond. 18.xii.2016 4♂5♀ (Halimullah & Waheed.A.P) same but 07.ii.2017 10♂9♀ (Halimullah & Imran)

Measurement. Total Body length: 28-30, Pronotum length: 8-9, Tegmen length: 9-10

Diagnostic features.

**Male.** Body medium to large 28-30mm slender in shape with yellowish-brown, paler beneath in coloration; antennae short filiform, forelegs designed for digging; pronotum large oblong 1.4 times longer than pronotal width. Ventral margin on outside of fore femur normally formed hind tibiae with three to four dorsal spurs on internal side. Tegmen shorter than the hind wings, wings usually projecting slightly from beneath of the forewings. Denticles found on stridulatory file, distributed in a series. Hind tibiae with minute spines. Genitalia with sclerite, colored from yellowish brown to brown.

**Female.** Tegmen slightly longer than as compared to the male. Other characters same as in male.

Habitat. *Gryllotalpa orientalis* lives underground in moist soil, tunnelling a network of channels. Its natural habitat includes moist rich soils such as flood plains and the banks of streams and ponds as well as arable land and gardens. *G.orientalis* feeds on the roots of plants, tubers and rhizomes and also on insects, earthworms and other invertebrates. It comes to the surface and undertakes flight in the evenings and at night and is attracted to light sources (Endo, 2007).

Comparative note. Several confusion has been found in identification of *Gryllotapa africana* and *G. fossor* Chopard (1931) reported *G.africana* as widely distributed species in Africa as well as in oriental region. Later on in (1965) he concluded that *G.fosser* should be corrected and recognized as *G. orientalis*. Townsend (1983). While revising the genus synonymical *G.fosser* as *G.africana*.

Distribution. This species is widely distributed in Pakistan, India, China, Russia, Japan, Korea, South Korea, Philippines, Singapore, Indonesia, Nepal and Taiwan.

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