



Observation on the Epiphallus and spermatheca in *Oedaleus senegalensis* Krauss
(Acrididae:Orthoptera)

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Abstract: The genus *Oedaleus* Fieber, is considered as economically important pest. During the present study fair numbers of female *Oedaleus senegalensis* Krauss were collected and dissected and following observation on spermatheca were noted down. Spermatheca coiled shaped ectodermal duct of origin. Pre-apical diverticulum slightly larger and finger like placed laterally it is rounded at apex while sac shaped Apical diverticulum with broaden, extended with curved process at stand. It is of varying sizes and shapes. Beside this, it was noted that this species is often associated with mesoxerophilic habitats and can be categorized as graminivorous. In addition of this, it has a certain importance because of the damage that it causes loss to consumer crops i-e (maize, bajra, rice, wheat etc), almost seedlings or nursery and un-ripe stages in fields. This species were considered as pest because it causes damage on valuable crops in various parts of Pakistan.

Keywords: Orthoptera, Epiphallus, Distribution, Pest, *Oedaleus*

1. INTRODUCTION

Orthoptera has varieties of super-families including Acridoidea contain short-horned grasshoppers. Earlier studies have classified this species based on specific characteristics. i.e; Cheke and Migrant (1990), Colvin (1997), Chandra (1983), Popov (1980). *Oedaleus senegalensis* is known destructive agricultural pest. Insects are characterized by gradual metamorphosis. It has chewing mouth parts along with two pairs of wings while the anterior pair thick and leathery covered second pair. This species is distributed throughout the warmer and semi-humid parts of the world, such as Northern Africa and Indian Sub Continent. *O. senegalensis* prefers fields of maize, wheat, grasses, shrub and millet Jago *et al.*, (1993); Colvin and Holt (1996); Maiga *et al.*, (2008) reported the damage and population of this grasshopper. Ecological conditions play key role to promote invasion of this pest. Bak *et al.*, (2007) and Fisker *et al.*, (2007) analyze the population size during rainy season. Otte (1995), Cressman (1997) and Lockwood (2004) recorded as major pest in America, Africa, and Asia. During the current study of the field it is observed that *Oedaleus senegalensis* is considered as economically relevant amounts of damage to pastures. In this research paper, the morphological characteristics of this species were focused. Besides this, the important features of the Epiphallus and spermatheca were sorted out. It's a mesoxerophilic in habitats and called as major pests of grasslands and crops throughout the country.

2. MATERIALS AND METHODS

Sampling

Sampling of *Oedaleus senegalensis* was done from grassland, dry vegetation, rangelands, along the roadsides and rocky areas etc. collected material brought to lab and killed and preserved by method described by (Riffat and Wagan, 2015).

Softening of genital components

Abdominal terminalia was relaxed in the whole insect over water in a small dessicator (to which a few drops of phenol / 70 % alcohol had been added) in order to avoid fungal augmentation. It may depend upon the size of the insect. Period of relaxing was normally 24 hours. The extracted material was put into small micro vials pinned through their rubber stopper underneath the insects from which the phallic structure had originally been removed. The spermatheca lies just above the vagina taken out. The diagrams were drawn with "Ocular square Reticule" of the stereoscopic dissecting binocular microscope. Millimeter unit was used for measurement.

3. RESULTS

Family: Acrididae Latreille, 1802

Subfamily: Oedipodinae Walker, 1870

Tribe: Locustini

1) *Oedaleus senegalensis* Krauss

Diagnostic characters:

Body is smaller to large in size 26-27mm, antennal segments in filiform and longer than head and

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pronotum. It has sub globular head which is shorter than pronotum. Fastigium of vertex wider, narrower from anterior side with raised margins. Short, triangular, foveolae, with flat frontal ridge. Pronotum strongly constricted with tectiform median carina 0.3mm indistinct oblique transverse dark band on its outer surface while tibia with dark basal ring structure is slender and shorter than femur which possess 13 and 12 inner and outer spines. Claws green brownish and shorter. There is x shaped white and brown stripes on pronotum. Transparent wings and tegmina has two brown bands. Femur is yellowish without dark stripes while tibia is reddish with yellowish outer aspect.

Morphometry:

Male: BL 17-21, AL 9-12, PL-4, TL 19-23, HF 12-14, HT 11-13

Female: BL 23-32, AL 10-12, PL 5-8, TL 26-35, HF 15-19, HT 14-17

Description of Epiphallus:

Epiphallus raised slightly. It is bridge shape, rectangular in appearance curved and thickening. Its anterior projections marked well, with finger like acute rounded boundaries and reach on one half of the ancorae. Deep and shallow projection posterior side. Its lateral plates are broader ancorae pointed with straight upward with thick, wavy and rectangular at apex. Lophi elongated, conical, place laterally. Finger shape from anterior side with acute apices. Inner lobes of lophi wider than outer. Lateral plate oval, small and circular sclerites.

Spermatheca: Cerci of female conical shaped, small, compressed slightly with angular apex. Ovipositor valves short and curved. Pre-apical diverticulum is finger shaped larger and placed laterally, rounded at apex. Sac shaped sub-apical diverticulum with elongated and rounded process at base.

Significance of insect: During periods of over population they can and will go after shrubs and tree, just about anything. Grasshoppers require warm, sunny conditions for optimal growth and reproduction. An example of a grasshopper outbreak in World is well known. The sperm are released from the spermatheca only when the eggs pass down the oviduct, so fertilization may occur just before the eggs are laid. Further, the shape of pouch or sac and 'spermathecal tubules' within the spermatheca vary among species, such characters may be noted for taxonomical study. The seminal receptacle functional for the collection and storage of the sperm, while the spermathecal tube is responsible for the sperm transport.

Species remarks: This species is very closely related to *O. nigrofasciatus* (Degeer) in having general body form but can easily be separated by rounded sub acute pronotal shape. Whereas in *O. nigrofasciatus* it is oval and by the other characters as noted in the keys and description.

Specimen depository: The type material has been deposited in the Museum of Entomology, Department of Zoology, University of Sindh, Jamshoro, Pakistan.

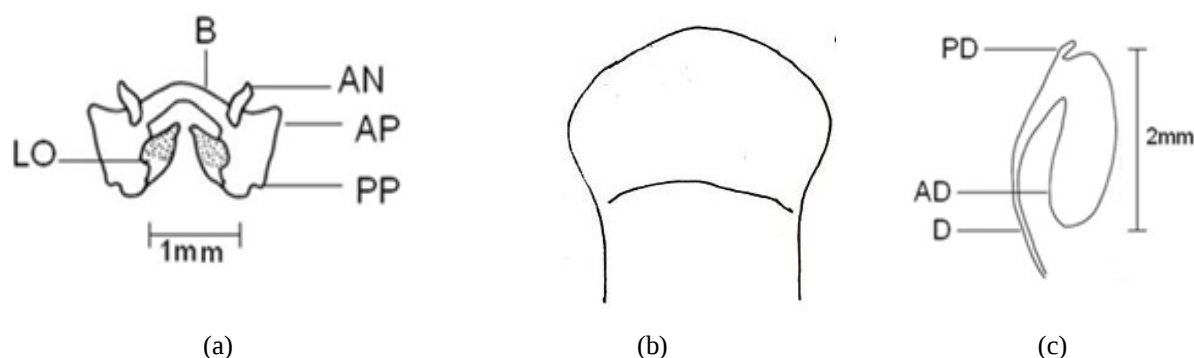


Fig.1: *Oedaleus senegalensis*, (a) Epiphallus (b) Dorsal side of pronotum (c) Spermatheca.

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