

A NEW SPECIES OF AILOPUS FIEBER (ACRIDIDAE: OEDIPODINAE FROM RANCHI (JHARKHAND))

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ABSTRACT

The genus *Aiolopus* Fieber, 1853 is represented by three species *A. simulatrix* (Walker), *A. tamulus* (Fabricius) and *A. thalassinus* (Fabricius) from India. During the course of the survey of Jharkhand apart from some old described species, a new species viz. *A. ranchiensis* sp. n. have been found which has been described with six illustrations and a revised key to accommodate the new species is also provided.

INTRODUCTION

The genus *Aiolopus* was first of all erected and described by Fieber in 1853 and since then this grasshopper has been known to be widely distributed from sea level to snowy mountains with significant economic importance. They are considered to be serious pests of paddy and wheat in India and in other countries where these crops are grown and notable taxonomical work on this group has been done by Bei-Bienko and Mishchenko (1951); Uvarov (1966); Hollis (1968); Ajaili *et al.* (1989), Usmani and Shafee (1990), Zheng and Wei (2000), Zheng Zhe Min and Sun Hur Min (2008), Usmani (2008) and Nayeem and Usmani (2011). As *Aiolopus* has been a source of anxiety for Acridid taxonomists throughout the world due to its notoriety, the present work was undertaken to survey the grasshoppers of Jharkhand and Bihar by visiting the agricultural fields. During the survey other groups of grasshoppers were also encountered but *Aiolopus* was observed attacking the crops of paddy, wheat and millet and was also seen infesting the vegetables such as brinjal, ladyfinger and tomato.

The main objective of the work is to identify the different species of *Aiolopus* encountered in the survey along with their hosts.

MATERIALS AND METHODS

The specimens were collected preserved in 70% alcohol. Dry mounts were also prepared for better understanding of certain characters like size, colour, texture etc.

For detail study of various components of genitalia, the apical part of male and female bodies were cut off and boiled in a

test tube containing 10% KOH solution till the material became transparent. This was later washed thoroughly in water for complete removal of KOH. Later, it was dissected under binocular with the help of fine needles to separate various components viz., subgenital plate, ovipositor and spermatheca of female; supra-anal plate and cerci, epiphallus and aedeagus of male. The normal process of dehydration was adopted and clearing was done in clove oil. The genitalic components were mounted separately on slides in Canada balsam under 22 mm square cover glass. The slides were kept in a thermostat at a temperature of approximately 40°C for about one week to make them completely dry.

The permanent slides were examined under the microscope in order to make a detail study of genitalic structures. Drawings were made with the help of Camera lucida.

RESULTS AND DISCUSSION

In the present study the genus *Aiolopus* Fieber belonging to the subfamily Oedipodinae is undertaken. The subfamily is characterized by prosternal process usually absent, if present, body strongly elongate and antennae ensiform; hind tibia without external apical spine; epiphallus (Fig. 1B) bridge-shaped, bridge undivided; spermatheca (Fig. 2C) with apical diverticulum short or rudimentary, pre-apical diverticulum sac-like. Stridulatory serration on inner side of hind femur absent. Body rather sturdy; frons usually vertical; medial area of tegmen with intercalary vein usually serrated.

The genus *Aiolopus* is characterized by the body of medium size; antennae filiform, as long as or longer than head and pronotum together; fastigium of vertex elongate-angular, slightly concave, with well-developed lateral carinulae; frons



Figure 1: *Aiolopus ranchiensis* sp. n. ♂



Figure 2: *Aiolopus ranchiensis* sp. n. ♀

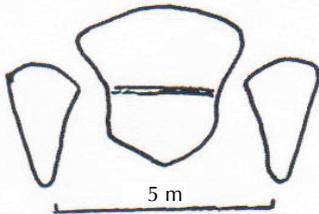


Figure 1A: Supra-anal plate & cerci, ♂

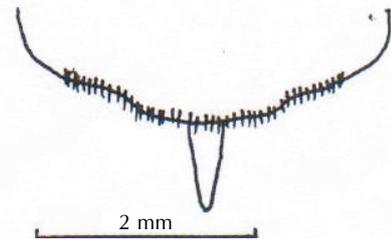


Figure 2A: Subgenital plate, ♀

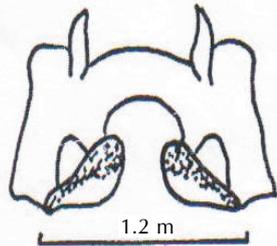


Figure 1B: Epiphallus, ♂

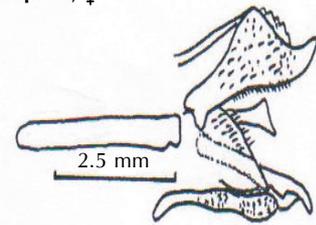


Figure 2B: Ovipositor, ♀

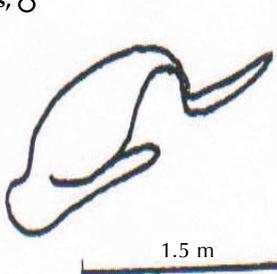


Figure 1C: Aedeagus, ♂

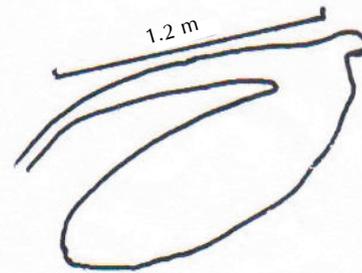


Fig. 2C. Spermatheca, ♀

oblique; frontal ridge flat; pronotum slightly tectiform and slightly constricted in prozona, median carina weak, crossed by posterior transverse sulcus only, lateral carinae absent; metazona distinctly longer than prozona, posterior margin obtuse-angular; mesosternal interspace open; tegmina and wings fully developed; medial area of tegmen with intercalary vein well-developed and finely serrated; hind femur slender; hind tibia with inner pair of spines longer than external one, external apical spine absent; arolium of small size. Male genitalia; supra-anal plate elongate-angular, cercus narrow-conical with obtuse apex (Fig. 1A); epiphallus (Fig. 1B), bridge undivided medially, ancorae curved and lophi bilobate; aedeagus (Fig. 1C), apical valve much shorter and narrower than basal valve. Female genitalia: subgenital plate (Fig. 2A), posterior margin broadly rounded, setose; ovipositor (Fig. 2B),

dorsal valve shorter than lateral apodeme, dorsal condyle indistinct; spermatheca (Fig. 2C), apical diverticulum short, pre-apical diverticulum broad and sac-like.

Considerable taxonomic work on this genus has been done by Fabricius (1781, 1798), Walker (1870b), Tandon and Shishodia (1976a, 1976b, 1976c, 1989), Usmani and Shafee (1990) and Nayeem and Usmani (2011).

This genus is represented by four species from India including *A. ranchiensis* sp. n. A key for their separation is given.

Key to Indian species of *Aiolopus* Fieber, 1853.

1. Pronotum with median carina crossed by posterior transverse sulcus only; lateral carinae straight, extending beyond the first sulcus, gradually diverging backwards.....2.

- Pronotum with median carina crossed by two or three transverse sulci; lateral carinae developed before the first sulcus only and distinctly convergent behind **A. simulatrix** (Walker).
- 2. Lateral carinae of pronotum smooth, reaching third sulcus; pronotum with posterior margin broadly rounded; tegmina uniformly rugulose throughout.....3.
- Lateral carinae of pronotum more feebly developed, not reaching third sulcus; pronotum with posterior margin obtusely angular; tegmina with upper half rugulose, while lower part is perfectly polished.....**A. thalassinus** (Fabricius)
- 3. Hind femur not denticulate along the upper carina: lateral lobes of pronotum shining throughout, whole surface black, except a broad yellow border along the lower margin; tegmina not reaching the first abdominal seg..... **A. thalassinus** (Fabricius).
- Hind femur denticulate along the upper carina; lateral lobes of pronotum polished only in the middle part, whole surface pale, with a black oblique spot in the middle; tegmina extending beyond the first abdominal segment..... **A. ranchiensis** sp. n.

Aiolopus ranchiensis sp. n. is predominantly graminivorous. It occurs predominantly in grassy places. It was observed on paddy found along roadside and also on soils densely covered by gramineae. Also found in irrigated land, in crops and abandoned cultivated land. This species has been observed to be attracted to light at night as well. Davey *et al.* (1959) reported nocturnal migrations of *Aiolopus* at the end of the rains indicating movements between seasonal habitats. Large numbers of *A. ranchiensis* sp. n. sometimes occur in irrigated fields. It may become a nuisance to agriculture especially where irrigation occurs on crops such as paddy and millet.

A. ranchiensis sp. n. runs near to *A. thalassinus* from which it can be separated by its hind femur being denticulate, pronotum pale with a black oblique spot in the middle and tegmina extending beyond the first abdominal segment.

Holotype ♀ 1 and ♂ 1, Paratype 10 ♀ and 3 ♂. INDIA: Jharkhand, Iteki, 4.viii.2012 (Sumbul Siddiqui).

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