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First record of *Callosobruchus orientalis* (Bruchidae: Coleoptera) from Tamenglong district of Manipur, India

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Abstract
Callosobruchus orientalis (Coleoptera: Bruchidea) was found in infested seeds of soybean (*Glycine max*) for the first time from the Tamenglong district of Manipur, India. Bruchid is known to attack leguminous seeds in storage and is a serious pest of stored grains .It is the report of its presence in the Indian sub continent.

Keywords: *Callosobruchus,* soybean, Bruchidae, Tamenglong district, Manipur, India.

1. Introduction
Among the storage bruchids the genus *Callosobruchus* is especially noted as consisting of some very serious stored legume pests. The family Bruchidae contains about 1300 species which breed mainly in leguminous seeds and are found all over the world. But most of these species develop in tropical and subtropical regions (Southgate 1979). Three species, namely *Callosobruchus chinensis* (L), *C. maculatus* and *C. analis* (F) are well established in this country and are pest of economic importance, breeding in several hosts such as seed of cowpeas*(Vigna unguiculata*), pea(*Pisum sativum*),, green gram (*Vigna radiata*), kidney bean*(Phaseolus vulgaris*) and others (Calderon, 1962). This group of species is known as "Storage bruchids'', as distinct from the "Field bruchids'' which infest seeds in the field and cannot develop in mature dry seeds (Calderon 1958) Several new species belonging to the genus *Callosobruchus* have been reported from the new and old world and many new species have been identified by many researchers such as Anton (2000), Calderon, *et al* (1987), Thakur (2012), etc
The newly introduced *C. orientalis* was found in the dry seeds of soybean being sold in the market at Tamenglong district of Manipur, North east India. These insects destroyed almost 100% of seeds in the sample obtained. No work is done on this line so far in Manipur and less work in India also. As sufficient literatures are not available this present paper may fill up a long gap for the future researchers.

2. Material and methods
This study has been conducted in the laboratory of Entomology, D.M College of Science, Imphal, Manipur, India. This specimen was collected from the grocery market at Tamenglong district of Manipur. Specimens were observed using a stereomicroscope and were measured with a digital calliper. Drawings were made using a Camera Lucida .Genitalia were boiled in 10% KOH for 5 minutes and rinsed in distilled water. The material examined has been deposited in the insect museum of D.M College of Science (ELDMC-SG-2). Some insects were also cultured in the laboratory of Entomology for further study.
The following abbreviations were used in the description: Dissected measurement is given in mm; BL= total body length, measured from the apex of the longer mandible to the apex of the elytra, BW= Maximum body width, measured across the widest place; HW= maximum head width ,the linear distance across the head including the eyes; PW=Maximum Pronotal width; PL= Pronotal length, measured from the apical margin to the basal margin along the midline; PA= width of pronotal apex, measured between the tip of the fore angle; EW= maximum elytral width; EL= elytral length, measured from an imaginary line connecting the apex of the humeral angle to the apex of the base.

2.1 Material examined
10 ♂,5♀,10.v.2014 Tamenglong district, 24.9833^{0}N, 93.4833^{0}E, Manipur, India, coll. M. Bhubaneshwari and N. Victoria. Specimen was registered under RRS No. 2117CO012/14 at Network Project on Insects Biosystematics (NPIB), Division of Entomology, IARI, New Delhi.

Distribution records: Indonesia: Java, Celebes, Bali and Lombok, Philippines: Mindoro, Manipur (North East India).

3. Results
Diagnosis
A member of *Callosobruchus chinensis* is closely related to *C. orientalis*. Both of them are externally similar but different in the elytra at apical fifth striae without pattern of pale greyish and dark brown setae. Elytra shorter, eye less bulging and distance between eyes longer. Male aedeagus with shorter lateral lobes and a long median lobe.

Species Description
Body – Body oval shape**,** small, BL- 2.94 mm and BW- 1.42 mm.

Head - Head moderate length, HW- 0.79 mm. Compound eye with deep 'U'- shaped cleft opening toward the front. Antenna with 11 segments, serrate to often pectinate

Pronotum- Pronotum conical, PW- 1.21 mm and PL- 1.03 mm long. Disc very densely punctate.
Scutellum longer than wide.

Elytra- Straight at mid third, weakly converging towards apex. Humeral calli distinct. Elytral striae distinct, punctate, striae 3-4 basally without protuberance. Intervals flat, with moderately dense micropuncturation and irregular row of large punctures.

Legs - Hind femora with acute, preapical denticle at lateroventral and mesoventral margins; both denticles of same length, lateroventral denticle distinctly broader than mesoventral denticle. Hind tibia with ventral, ventrolateral, lateral and dorsomesal carinae complete, dorsal carina indistinct, Pygidium densely punctate.

Genitalia- Lateral lobes strongly elongate, completely separated subspatulate, latero-apically and at basal half stronger sclerotized than at remaining parts, apically arcuate; apex with about 18 setae; setae varying in length, two of them long (fig. 1,F) but median lobe is more elongated than two lateral lobes, actual size is 1.51 mm.

Male - Antennae extending to end of third fourth of elytral length; shape of segments not varying, 1-2 filiform, 3 subserrate, 4-10 serrate, 11 elongate and linear, 3-8 becoming steadily broader, 1 about twice longer than 2 and about 1.6 times longer than 3, 8-10 about as long as wide, segment 11 about 1.34 long , with distinctly pointed tip (fig. 1).

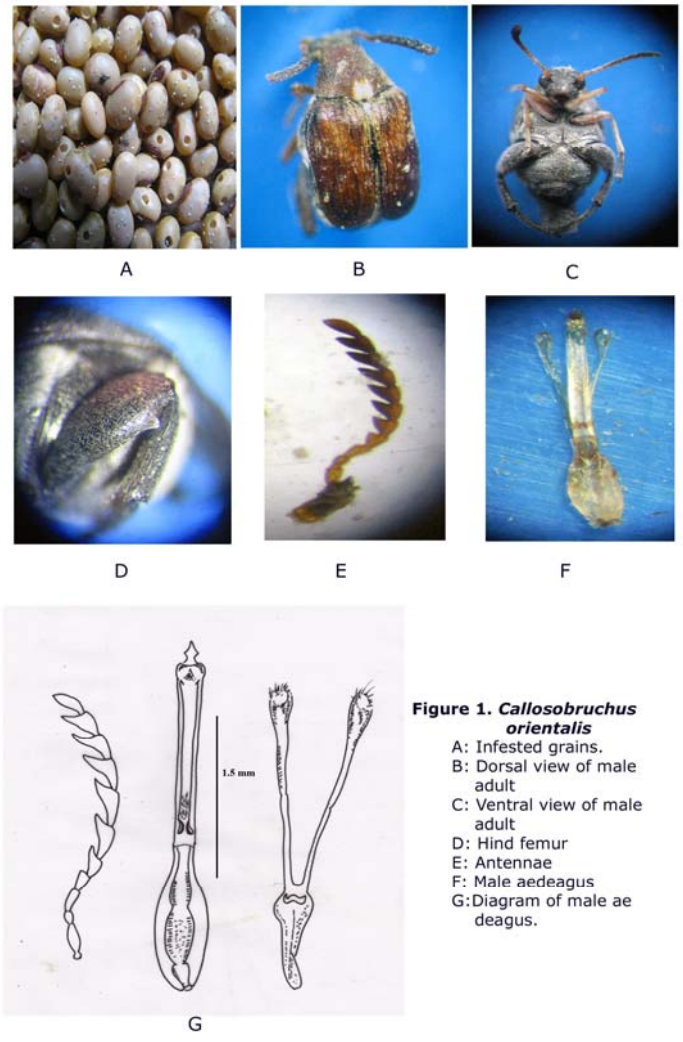

Figure 1. ***Callosobruchus orientalis***
A: Infested grains.
B: Dorsal view of male adult
C: Ventral view of male adult
D: Hind femur
E: Antennae
F: Male aedeagus
G: Diagram of male ae deagus.

Female – Body is slightly shorter than male, Actual size of BL-2.78 mm and BW-1.68 mm, Head width HW-0.90, Antennae similar to males, but shorter, reaching behind humeral callus; segments 1-3 filiform, 4 subserrate, 5-10 serrate, 11 oblonge, 8-10 about1.1 times longer than wide, 11 about 1.9 times longer than wide, with pointed tip. Eyes moderately bulging, maximum width of eye about 2.5 times wider than minimum distance between eyes. Pronotum – PL-1.09 mm, PW-1.27 mm .Elytra is slightly different with male EL-1.39 and single elytra EW-0.85, humeral calli distinct, light brown in colour. Abdomen simple; pygidium 1.1 times longer than wide; sternite V not emarginated. Ovipositor very short, with apical styli oblonge; stylus apically with three short setae; bursa copulatrix without sclerotized armature.

4. Discussion

C. orientalis was distinguished from other *Callosobruchus* members by its peculiar aedeagus. Morphologically *C. orientalis* is almost similar in coloration with *C. chinenesis* but differs in aedeagus having two elongated lateral lobes and a longer median lobe. Distinction is made based on male aedeagus structure provided by Anton (2000). Seventeen different species of *Callosobruchus* were reported recently in the check list of Pulse beetles by Bano *et al* (not cited) without *C. orientalis* in the list. In the present paper *C. orientalis* is reported for the first time from Tamenglong district of Manipur, North East India

5. Remarks

The first recorded species of Manipur is almost similar with *C. orientalis* of Anton, 2000, compared with male aedeagus, diagnosis and description. Externally *C. orientalis* is quite different from other genus *Callosobruchus* which is found in India .Hence due to the above it can be concluded as the first recorded specimen in Manipur, India.

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