A NEW SPECIES OF *CALLOSOBRUCHUS* (COLEOPTERA: BRUCHIDAE) FROM THAILAND AND CHINA[1]

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ABSTRACT: *Callosobruchus imitator*, new species, is described from Thailand and China. It is apparently closely related to *Callosobruchus rhodesianus* in Africa. It attacks seeds of *Vigna unguiculata*, and *Vigna umbellata*.

James Madenjian of the Department of Health and Human Services, Food and Drug Administration in Los Angeles recently submitted specimens of a bruchid seed-beetle from Thailand and China found in regulatory samples of commercial products (mostly or entirely dead) from *Vigna unguiculata* (L.) Walp. subspecies *cylindrica* (L.) Verdc. (catjang), from *Vigna unguiculata* subsp. *unguiculata* (black-eyed peas or cowpeas), and from *Vigna umbellata* (Thunb.) Ohwi and H. Ohashi (rice bean). All host plants are in the Leguminosae, Papilionidae.

I have been unable to reconcile this bruchid with any of the described species of *Callosobruchus* known from that region. In the key to the Indonesian species of *Callosobruchus* by C.P. Haines (1989), it would be identified as *C. chinensis* (L.) or to *C. rhodesianus* (Pic).

Callosobruchus imitator Kingsolver, NEW SPECIES

Figures 1-8, 11-13

This species' characters are consistent with those of *Callosobruchus*, and similar in color pattern to that of *Callosobruchus rhodesianus* (Pic).

Color.- Most of body dark red to piceous, head black, antenna in both sexes yellow, pygidium reddish yellow, forelegs and midlegs yellow, abdomen and hind legs often partly red, partly piceous.

HOLOTYPE ♂: Head with median fringe of yellowish setae on medial margin of each eye, vertex with sparse yellowish setae, postocular fringe yellow. Scutellum white. Pronotal vestiture yellowish white, setae long, fine, sometimes abraded on disk, basal lobe with quadrate, bilobed pad of waxy, matted white setae; elytral setae yellowish white except piceous on lateral maculae, occasionally with prominent but short white stripe on third interstice; pygidial vestiture without markings, white; ventral vestiture of thinly distributed, white setae except for intensely white patch at lateral margin of each of abdominal segments 3-5.

Structure.- Body obovate, deep. Head turbiniform; eye slightly protuberant; ocular sinus less than one-half length of eye; vertex densely punctulate, frons more coarsely punctate with setae extending toward median line; frontal carina sharp, prominent; pronotum campaniform, strongly convex, slightly sulcate either side of basal lobe; discal sculpture microfoveolate, each foveola bearing median seta; scutellum quadrate, bifid distally. Elytra together as long as wide, lateral margins gently arcuate; striae moderately deep, sinuate, evenly spaced, 2d, 3d, 4th and 5th with

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minute basal denticles. Pygidium subtriangular, slightly truncated, reflexed into terminal emargination of sternum 5. Metacoxa evenly punctulate; metafemur (fig. 2) swollen, lateroventral margin with broadly triangular, acute denticle, mesoventral margin with single, acute denticle (fig. 3) whose length is one-half width of metatibia at point of juncture when closed; metatibia slightly arcuate, mucro acute (fig. 2), lateral denticle acute, two coronal denticles placed at terminus of dorsal margin.

Body length.- 2.25-2.50 mm; width.- 1.5-1.7 mm.

Male genitalia.- Median lobe long, narrow, six times as long as width at apex (fig. 7); ventral valve ogival, arcuate, apex acute; internal sac with elongate granular cluster at apical orifice (fig. 11), apical one-half of sac lined with elongate, slender spicules (fig. 12), morphological apex of sac with two burr-like sclerites (fig. 13); lateral lobes long, slender, separated more than one-half their lengths, apices scarcely expanded (fig. 8).

Female.- Head and pronotum similar to that of male; elytra with more extensive piceous lateral and apical maculae (occasionally lacking lateral maculae); pygidium vertical, immaculate, occasionally with indistinct subapical spots, with basal band of setae, usually with apical one-half denuded with exposed integument dark red; ventral and lateral areas of abdomen as in male.

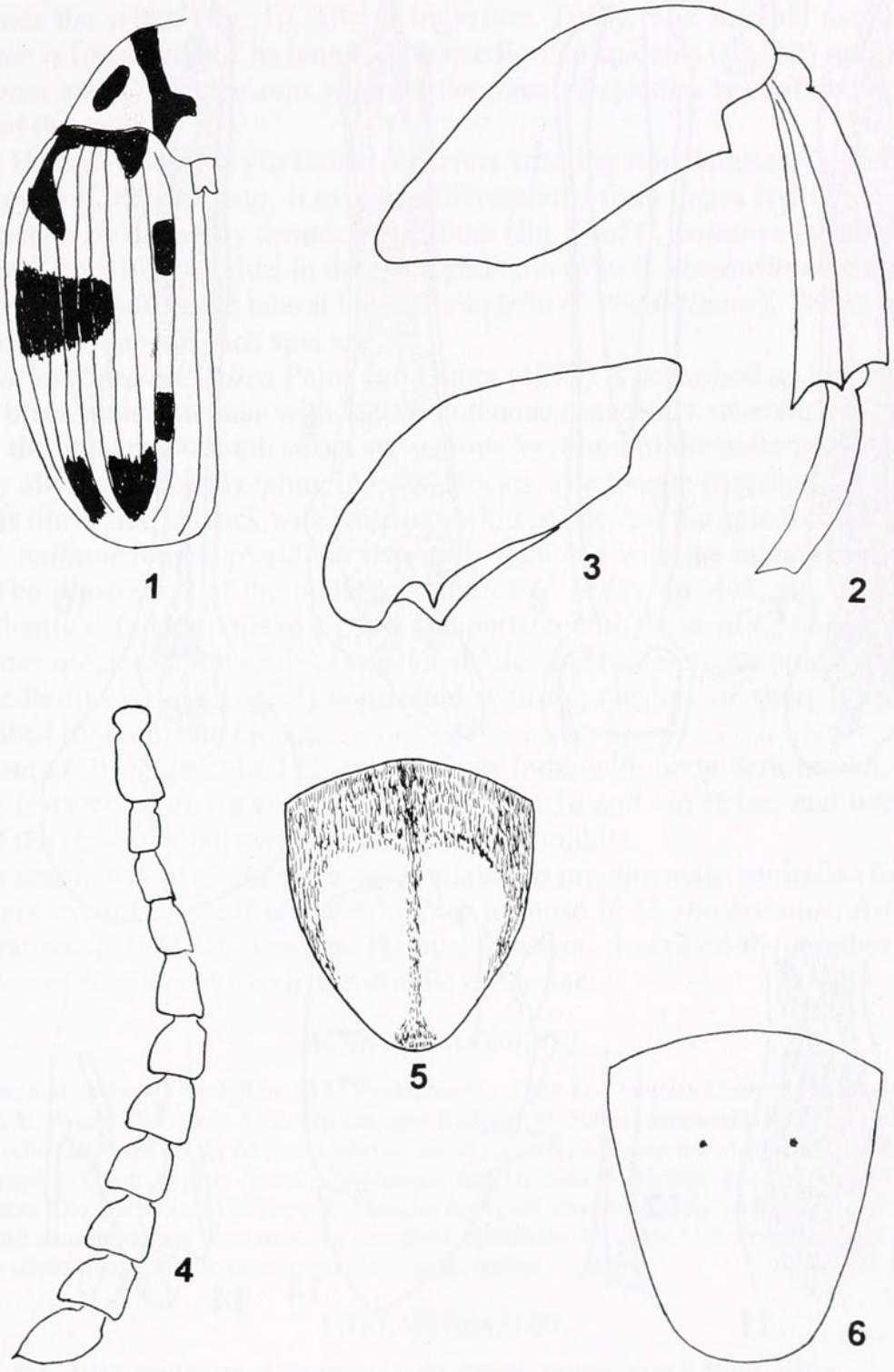
HOLOTYPE ♂: Thailand, no specific locality, November 1991, ex. red bean, *Vigna unguiculata* subsp. *cylindrica* (L.) Verdc., J.J. Madenjian. Type deposited in the National Museum of Natural History, Washington DC.

PARATYPES: 21 ♂♂♀♀, same data as holotype; 1- same data except October; 1- Thailand, August 2, 1994, *Vigna unguiculata* subsp. *unguiculata*, J.J. Madenjian; 1- China, July 10, 1995, ex. *Vigna umbellata* (Thunb.) Ohwi and H. Ohashi, R.W. Potter. Paratypes deposited in the National Museum, Washington DC.; California Academy of Sciences, San Francisco; Texas A & M University, College Station; Florida State Collection of Arthropods, Gainesville; Los Angeles County Museum, California; University of California collections at Riverside and Berkeley; collections at the Department of Health and Human Services, FDA, in Los Angeles, and in Washington, DC.

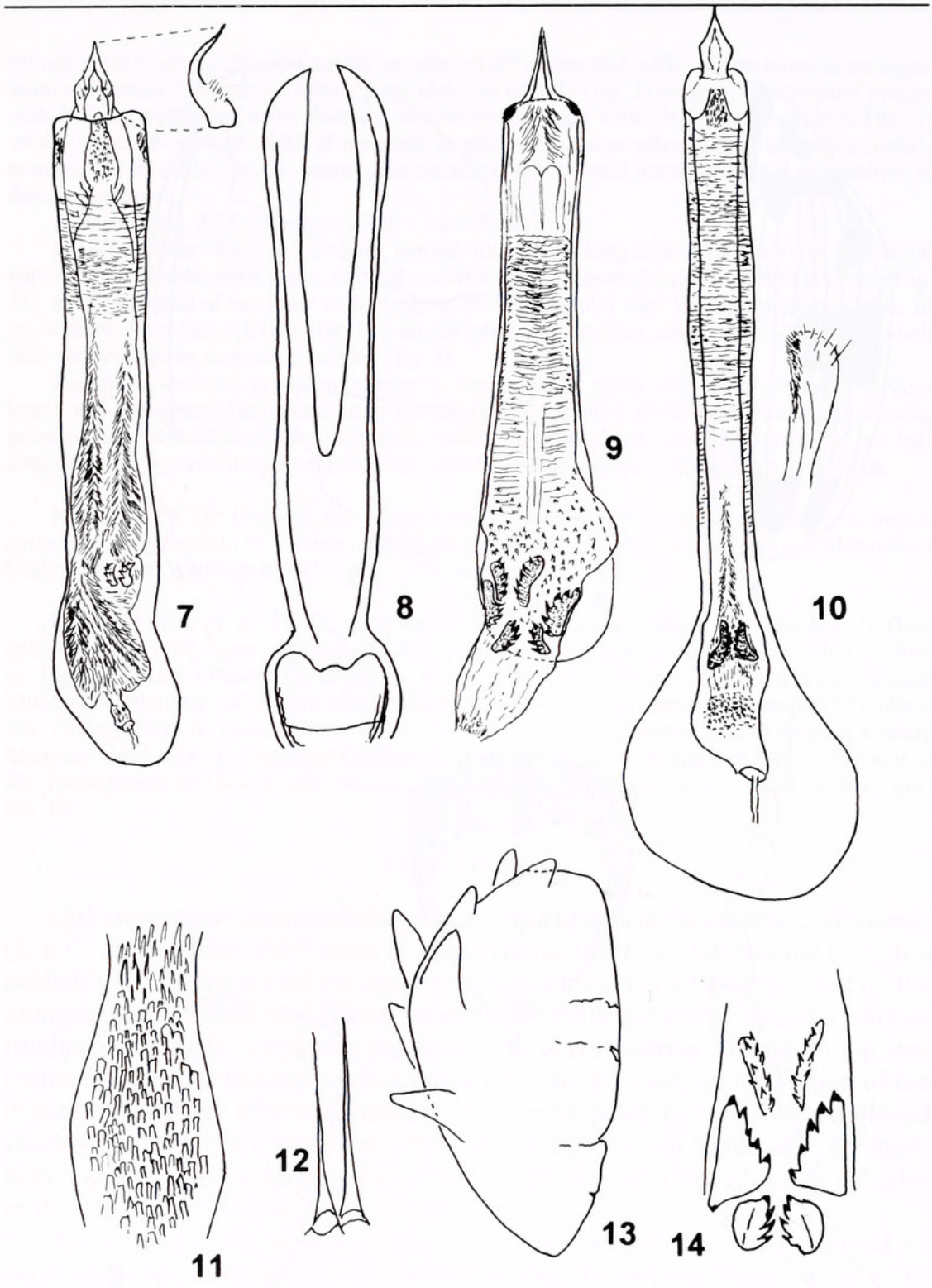
DISCUSSION

Callosobruchus imitator belongs to a group of species including *C. chinensis* (L.), *C. indica* Pajni and Gupta, *C. rhodesianus* (Pic), *C. theobromae* (L.), and probably *C. cajanis* Arora (no specimens available) characterized in part by the elongate median lobe and lateral lobes of the male genitalia, antennae serrate (male antennae of *C. chinensis* pectinate), the dorsal portions of abdominal segments 3-5 with an intensely white patch of setae, the swollen basal lobe of the pronotum likewise with an intensely white setal patch covered with a glazed coating. Differences in male genitalia within the group can be found in the numbers and positions of the burr-like sclerites and clusters of needle-like spicules in the male genitalia (figs. 7, 9, 10 and 14).

The new species is most similar in appearance to *C. chinensis* and *C. rhodesianus* but with the following differences: 3d and 4th elytral striae of *C. chinensis* originating basally in a tubercle surmounted by two fine denticles, whereas in *C. rhodesianus* and *C. imitator*, the tubercle is lacking; male and female antennae of *C. imitator* similar in both sexes (fig. 4), slightly serrate, not dimorphic; inner tooth of hind femur short, acute, not as long as the broadly triangular lateral tooth in *C.imitator* (fig. 3), but of similar length to lateral tooth in *C. chinensis*; male genitalia of *C. imitator* with median lobe 8 times as long as its width at middle (fig. 7), whereas, in *C. chinensis*, the length is 12 to



Figures 1-6: *Callosobruchus imitator*, new species. 1. Pronotum and elytra, left one-half with patterns 2. Left hind leg, lateral aspect. 3. Left hind femur, ental aspect. 4. Antenna. 5. Female pygidium showing extent of denudation. 6. Male pygidium.



Figures 7-14: *Callosobruchus* spp., male genitalia. 7. *C. imitator*; median lobe, inset- ventral valve, lateral aspect. 8. *C. imitator*, lateral lobes. 9. *C. theobromae*, median lobe. 10. *C. chinensis*, median lobe, inset-apex of lateral lobe. 11. *C. imitator*, scaly area near ventral valve. 12. *C. imitator*, spicules of internal sac. 13. *C. imitator*, burr-like sclerite at apex of internal sac. 14. *C. rhodesianus*, sclerites at apex of internal sac.

14 times the width (fig. 10, after Kingsolver, 1969). The internal sac in *C. imitator* is lined for half its length with needle-like spicules (fig. 12) unlike *C. chinensis* and *C. rhodesianus* wherein the mass of spicules is confined to the apex of the sac.

In Haines' (1989) key to *Callosobruchus* infesting stored pulses, *C. imitator* will key to *C. rhodesianus*. It may be differentiated from males and females of that species by the partly denuded pygidium (fig. 5) of *C. imitator*, by the presence of 2 burr-like sclerites in the male genitalia (6 in *C. rhodesianus*) and by the acute apex of the lateral lobe (truncate in *C. rhodesianus*). The antenna is similar in shape in each species.

Callosobruchus indica Pajni and Gupta (1975) is described as having entirely black male antennae with female antennae testaceous, whereas in *C. imitator*, the antennae of both sexes are yellow. Vestiture of the male pygidium is nearly always uniformly white in both species. The female pygidium of *C. indica* as illustrated is black with a median white stripe, but the apical one-half of the *C. imitator* female pygidium is usually denuded with the integument dark red. The illustration of the male genitalia of *C. indica* (p. 448, fig. 2) is not sufficiently detailed to make a good comparison with those of *C. imitator* but the latter species has one pair of small denticles and two elongate apical masses of needle-like spines (fig. 7) contrasted with the clusters of short tubercles described by Pajni and Gupta.

Arora (1977) described *C. cajanis* from India with body dark brown, antennae testaceous, elytra with basal tubercle on 3d and 4th striae, and internal sac of the male genitalia with toothed plates in middle.

In specimens of *C. theobromae* available to me, the male genitalia (fig. 9) have six irregular apical sclerites similar to those in *C. rhodesianus*. Arora's illustration showed six sclerites. Haines, however, described the number and position of sclerites as two in the middle of the sac.

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