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A new species of *Pseudoscymnus* (Coleoptera: Coccinellidae) predacious on coconut scale in peninsular India

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Introduction

Since Chapin (1962) first recognized and segregated a group of unusual scymnines which he named *Pseudoscymnus*, with *Scymnus hareja* Weise, 1879, as the type-species, 13 species and one subspecies have been assigned to this genus. Chapin also included *Scymnus kurohime* Miyatake, 1959, in *Pseudoscymnus* and suggested that *Scymnus seboshii* Ohta, 1929, *Scymnus sylvaticus* Lewis, 1896, *Scymnus pilicrepus* Lewis, 1896, and *Nephus quinquepunctatus* Weise, 1923, probably belonged in the new genus. Kamiya (1965) described the subspecies, *Pseudoscymnus quinquepunctatus okinawanus*, from the Ryukyu Islands, and Chapin (1965) described *P. anomalus* as new from the Truk Islands in the Pacific Ocean. Kamiya (1966) transferred *Scymnus ishidai* Araki, 1963, *S. nakanei* Araki, 1963, *Clitostethus lewisi* Kamiya, 1961, and *C. nagasakiensis* Kamiya, 1961, to *Pseudoscymnus* and presented a key to the species of this genus known to occur in Japan and the Ryukyus. Chapin & Ahmad (1966) recorded a species of *Pseudoscymnus* for the first time from the Asiatic mainland when they described *P. simmondsi* as new from Pakistan. Ahmad (1968) described a further new species, *P. murreensis*, also from Pakistan. Iablokoff-Khnzorian (1972) studied the lectotype of *Scymnus pallidicollis* Mulsant, 1853, from ' Ind. or., Birma ', and transferred it to *Pseudoscymnus*. However, since he stated—' Bien que les antennes et les palpes de cette espèce n'aient pu être étudié . . . , ' until the antennae and maxillary palps (which are diagnostic of *Pseudoscymnus*) of *S. pallidicollis* are examined, it would be advisable not to accept this generic transfer.

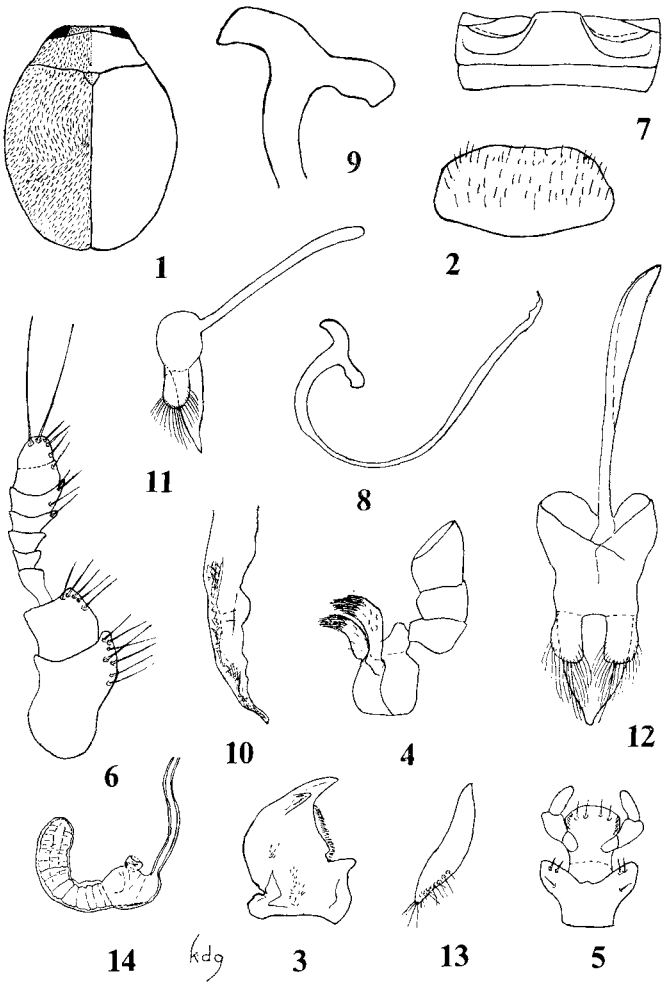
Besides these 13 described species of *Pseudoscymnus*, there are apparently many more awaiting description from the Oriental Region. Dr. Hiroyuki Sasaji (formerly Kamiya) informed me (pers. comm., 1971) that he has examined some 10 undescribed species of *Pseudoscymnus* from Thailand, 8 from the Philippines and 12 from Taiwan, and pointed out that some species described as *Scymnus* s. lat. from south and southeast Asia may actually belong to *Pseudoscymnus*.

During field surveys for Coccinellidae in south India, the author collected material of an apparently undescribed species of *Pseudoscymnus*, which was also reared from larvae found feeding on the hard scale, *Aspidiotus destructor* Signoret, infesting undersurfaces of leaves of coconut trees. This is the first species of the genus to be described from the Indian Union.

Pseudoscymnus dwipakalpa sp. nov.

(Figs. 1–14)

Body obovate, moderately convex (fig. 1). Head light brown, eyes black; mandibles dark brown, other mouthparts and antennae light brown. Pronotum,



FIGS. 1–14. *Pseudoscymnus dwipakalpa* sp. nov.: (1) dorsal view of shape, coloration and pubescence of adult beetle; (2) labrum; (3) mandible; (4) maxilla; (5) labium; (6) antenna; (7) abdominal lines; (8) sipho; (9) siphonal capsule; (10) apex of sipho; (11) lateral view of tegmen; (12) dorsal view of tegmen; (13) genital plate; (14) spermatheca.

scutellum and elytra uniformly light brown, the lateral margins of pronotum and extreme apices of elytra paler (in some specimens). Underside light brown; legs, epipleurae and lateral portions of sternites paler, more yellowish.

Head. With fine, weakly impressed, fairly dense punctation, and shortish, fairly dense, white pubescence directed anteriorly; clypeus broadly emarginate and almost totally covering labrum. Eyes finely faceted, with dense pile of short, fine, erect white hairs. Labrum (fig. 2) twice as wide as long, with short hairs except along posterior margin; mandible (fig. 3) bidentate at apex with a basal tooth; maxilla (fig. 4) with last palpal segment securiform, apical margin entire; labium (fig. 5) with mentum as in figure, anterior margin deeply emarginate with a minute denticle in centre of emargination; antenna (fig. 6) 9-segmented, characteristic of genus, basal segment largest, third through ninth forming a club-shaped flagellum, ninth segment with apex subconical.

Pronotum. As wide as elytral base, almost twice as wide as long; anterior margin strongly emarginate, lateral margins straight, anterior angles well marked; punctation and pubescence as on head, the punctures separated by a little more than their diameters; pubescence for the most part directed caudad, laterad at lateral margins (fig. 1).

Scutellum. Small, triangular, with acute apex, lateral margins slightly sinuate and longer than basal margin, with a few punctures and hairs.

Elytra. With basal margin sinuate, humeral calli distinct; pubescence of dense, depressed white hairs, longer than those on pronotum, directed as shown in fig. 1. Punctation dense, weakly impressed, the punctures separated by a little more than their diameters; elytral apices rounded.

Underside. With punctation and pubescence sparser, hairs directed mainly posteromedially, except on epipleurae where they are directed posterolaterally. Prosternal carinae prominent; abdominal lines (fig. 7) incomplete, subterminal. First sternite longest, second half as long, third to fifth shorter and subequal, sixth with arcuate, entire apical margin. Elytral epipleurae broad at base, narrowing to apex, which is at middle of width of first sternite. Legs with femora somewhat expanded, tibiae flattish, tarsi 3-segmented, claw with a subquadrate basal tooth.

Male genitalia. With sipho (fig. 8) fairly slender and strongly curved proximally, abruptly narrowed at one-fourth its length from base of siphonal capsule, apex as in fig. 10; siphonal capsule (fig. 9) with inner and outer processes subequal in length, inner process sinuate on inner margin, apex truncate; outer process gradually curved and with blunt hook-like apical process. Tegmen (figs. 11 and 12) with median lobe in dorsal view subconical, with apex gradually narrowing to a blunt point; paramere reduced, about half as long as median lobe, less than twice as long as wide, subrounded apically, with a row of long hairs on apical margin, which almost reach the apex of median lobe; trabes about 1·5 times as long as rest of tegmen from basal piece to apex of median lobe.

Female genitalia. With genital plate as in fig. 13, very much elongate and somewhat spindle-shaped, with a few shortish hairs along inner margin near sexual tubercle (stylus), Spermatheca (fig. 14) characteristic of genus, with ramus short and stout, nodulus slightly sinuate and about as long as the heavy walled, curved cornu, with wrinkles and a rounded apex.

Length. 1·78–2·57 (av. 2·24) mm. *Width.* 1·42–2·07 (1·73) mm.

Holotype ♂. India: Karnataka: Bangalore District: Hebbal, nr. Bangalore, 14.xi.1969, K. D. Ghorpade coll., no. KDG 6739, feeding on *Aspidiotus destructor* on Coconut.

Paratypes. 46 ex., India: Karnataka: Bangalore District: 1 ex., Doddagubbi, nr. Bangalore, 2.x.1969; 5 ex., same locality, –.viii.1970; 2 ex., same locality, 18.ix.1971; 2 ex., same locality, –.ix.1971; 4 ex., same locality, 1.i.1972; 1 ex., same locality, –.i.1972, all K. D. Ghorpade coll. 4 ex., Hebbal, nr. Bangalore, –.ix.1969; 2 ex., same locality, 14.xi.1969; 5 ex., same locality, –.viii.1970; 1 ex., same locality, no date; all K. D. Ghorpade coll. 3 ex., same locality, 11.viii.1968; 1 ex., same locality, 11.x.1968; 2 ex., same locality, 29.ix.1969; 2 ex., same locality, 22.xii.1969; all K. Durga Prasad coll. Karnataka: Raichur District: 1 ex., Hagedal, nr. Yelburga, 1.viii.1970; 3 ex., same locality, 6.viii.1970; all K. D. Ghorpade coll. India: Andhra Pradesh:

West Godavari District: 2 ex., Pedavegi, nr. Eluru, 28.xii.1968; 3 ex., same locality, 29.xii.1968; all K. Durga Prasad coll. 2 ex., Potunuru, nr. Eluru, 15.iii.1972, K. D. Ghorpade coll.

Distribution. India: Karnataka: Bangalore and Raichur Districts; Andhra Pradesh: West Godavari District.

The holotype (with genitalia and abdomen dissected and preserved in a microvial pinned with the specimen) is retained in the author's collection for the present. Two paratypes each will be deposited in the Zoological Survey of India, Calcutta; the British Museum (Natural History), London; the United States National Museum, Washington, D.C.; and in the U.S.S.R. Academy of Sciences, Leningrad. The remaining paratypes (some dissected and mounted on slides) are in the author's collection.

Etymology. The species name is taken from the Sanskrit 'dwipakalpa' meaning a peninsula, and alludes to its present known distribution in peninsular India. The name is treated as a noun in the nominative singular standing in apposition to the generic name.

Remarks. The new species is closely related to *Pseudoscymnus simmondsi* Chapin & Ahmad, 1966, in coloration, structure of male genitalia and female spermatheca. It can be distinguished from that species by the shape of the mentum, median lobe of tegmen and the sipho, and by the different structure of the female spermatheca and also by the characters given in the key below.

Larvae of the new species, covered with white cottony processes as in most Scymnini, were found to be specific predators of the coccid, *Aspidiotus destructor* Signoret, attacking *Cocos nucifera* Linnaeus, in all the localities from where the adults (which also feed on the hard scale) were collected.

The following key is to the species of *Pseudoscymnus* occurring in the Indian subcontinent only. The extralimital species, all of which have some black markings on the elytra, key out in the first couplet and can be separated by using the key to species from Japan and the Ryukyu Islands in Kamiya (1966). However, *P. anomalus* Chapin, 1965, is not covered either by Kamiya's or the author's present key.

Key to species of *Pseudoscymnus* Chapin from the Indian subcontinent

1 Elytron without black markings, at most with dark brown patches 2
– Elytron with black markings . . . . . refer to key in Kamiya (1966)
2 Elytron entirely unicolorous, pale; at most with apical portion slightly paler 3
– Elytron light brown with darker brown patches on basal two-thirds; apical portion paler . . . . . ***murreensis*** Ahmad
3 Inner process of siphonal capsule longer than outer process; median lobe of tegmen rounded oval with apex abruptly and acutely pointed; mentum with apical margin straight, lateral margins produced into blunt, conical processes . . ***simmondsi*** Chapin & Ahmad
– Inner and outer processes of siphonal capsule almost equal in length; median lobe of tegmen subconical, with apex not acutely or abruptly pointed; mentum with anterior margin strongly emarginate . . . . . ***dwipakalpa*** sp. nov.

Summary

Pseudoscymnus dwipakalpa sp. nov., is described from the States of Karnataka and Andhra Pradesh in southern India as the first species of the genus known from India, though two other species have been previously described from Pakistan. The known species of *Pseudoscymnus* Chapin from the Indian subcontinent are keyed and the new species is illustrated. It was

reared from the coccid, *Aspidiotus destructor* Signoret infesting Coconut leaves.

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