

## TWO NEW SPECIES OF THE GENUS *SCOTTIOLA* UVAROV (ORTHOPTERA: GRYLLIDAE: NEMOBIINAE) FROM PAKISTAN

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### ABSTRACT

Two new species of the genus *Scottiola* Uvarov are described to accommodate one already described species in detail with reference to their genital components. A key to the Pakistani species is formulated and the cladistic relationship of included taxa is also discussed by using their apomorphies.

**Key words:** New species, *Scottiola*, Orthoptera, Gryllidae, Pakistan.

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### INTRODUCTION

The representatives of the genus *Scottiola* of sub family Nemobiinae are distributed mostly in tropical region. Both sexes of the genus are apterous. Chopard (1969) described the fauna of India and adjacent countries in which he discussed from Pakistan on the basis of their external morphology. Quayyoom *et al.* (1987) worked on the phonetic approach to the taxonomy of Gryllidae of Faisalabad on generic level. Sinzo (1978) also discussed climatic adaptation and species status in the lawn ground cricket. Hinton (1949) described the common insect, pests of stored food products. Kamaluddin and Khan (2005) described three new species of the genus *Pteronemobius* from Pakistan and Khan and Kamaluddin (2006) discussed the detailed morphology of *Pteronemobius indicus* Walker of the sub family Nemobiinae.

### MATERIALS AND METHODS

A few specimens were collected from grasslands of Thatta; Sindh by the sweeping technique from insects net and with the help of light trap, later identified with the help of Chopard (1969) and other collected literature. The specimen was externally studied then for the study of genital components, the posterior abdominal part of specimen was removed and boiled in 10% KOH solution for about 5 to 10 minutes. Then washed with tap water, and dissected out under Leitz binocular microscope in the same media. The various structures were examined and their diagrams were made placing these on cotton thread immersed in glycerin with the help of eyepiece graticule. After completion of the diagram, the genital components were preserved in microvial with glycerin and placed with the specimen.

### RESULTS

#### *Scottiola uvarov*

*Scottia* Bolivar. 1912, *Trans. Linn. Soc. London*, 15:279.

*Scottiola* Uvarov. 1940, *Ann. Mag. Nat. Hist.*, 6 (11): 377 (nom. nov.);

Chopard. 1969, *Faun. Ind.* 2: 177.

**Diagnostic features:** Body usually small sized, not more than 9 mm in length, both male and females apterous, pubescent and covered with long bristles, head much broader than long, pronotum rectangular shaped with lateral margins sinuated, antennae very long about 2 X the length of body, anterior tibiae unperforated or presenting a small external tympanum, hind femora thick and broad, very large posterior tibiae with 3 or 4 external and 2 or 3 internal spines.

**Comparative note:** This genus is most closely related to other genera in having movable spines on hind tibiae and general characters but it can easily be separated from the others in having body sized slightly longer, elytra and wings absent in both sexes.

**Type species:***Scottia chagosensis* Bolivar.**Distribution:** Seychelles Islands, Chagos Archipelago, India, Ceylon, Malaya, Samoa, Sarawak and Pakistan.**Key to the species of the genus *Scottiola* Uvarov.**

1. Posterior femora obliquely striated with brown on their external face, posterior tibiae adorned with three brown rings, anterior tibiae with an external tympanum. .... *minima* (Chopard).  
 Posterior femora unicolorous or with a faintly visible brown band, posterior tibiae without brown rings, anterior tibiae unperforated .....2
2. Head and pronotum convex above, pronotum rather strongly narrowing posteriorly, colouration uniformly brown.....*ceylonica* (Chopard).  
 Body somewhat depressed, head flattened above, pronotum with almost parallel sided.....3.
3. Body dark brown, antero-median margin of head medially notched, posterior tibiae with 3-spines on each margin. ....*rufoverigata* Chopard  
 Body testaceous or yellowish brown, antero-median margin of head medially produced .....4.
4. Body cylindrical with thickly and largely bristles, lateral margins of pronotum convex, hind tibiae with 4-inner and 4-outer spines.....*cylindrica* (Sp.n.).  
 Body obovate with small and scarcely bristles, lateral margin of pronotum sinuated, hind tibiae with 3-inner and 4-outer spines. ....*oblongata* (Sp.n.).

***Scottiola cylindrica* (Sp.nov.)****(Figs.1 and 2)****Colouration:** Body generally yellowish brown, except few spots or bands on head and bristles black all over the body, palpi light brown.**Head:** Much broader than long, about 1.5 X of its width, antecular distance less than half of the length posterior of head including eyes, apex of head narrowly rounded, length of antecular distance 0.5mm, posterior of head including eyes 1.3mm,width of head 6mm, interocular distance 1.4mm.**Thorax:** Pronotum almost rectangular shaped, anterior and posterior angle sub-prominent, lateral margins convex, width of pronotum about 1.5X of its length, length of pronotum 1.7mm, width 2.6mm.**Legs:** Fore and mid tibiae with three unequal sized terminal spines, hind tibiae with four outer and four inner spines, first segment of hind tarsi with four spines.**Abdomen:** Abdomen cylindrical, cerci large, length of abdomen 5.5mm. Total body length of male 9.7mm.**Male genitalia (Fig. 2):** Genital plate rectangular shaped, paraproct lobe-like with sub rounded apices, epiproct large semispherical with posterior margin highly convex, besets with thorn-like hairs; genitalia reduced not clearly visible.**Material examined:** Two males; Pakistan, Sindh, Thatta; on grass; 15-6-1999; leg. Nadeem Tamimi; lodged at Kamaluddin's collection.**Comparative note:** This species is most closely related to *S .oblongata* in having testaceous or yellowish brown body, antero-median margin of head medially produced, but it can easily be separated from the same in having body

cylindrical with thickly and largely bristles lateral margins of pronotum convex, hind tibiae with 4-inner and 4-outer spines and by the other characters as noted in the key and description.

***Scottiola oblongata* (Sp.nov.)**

**(Figs. 3 and 4)**

**Colouration:** Body generally testaceous brown, a dark band on the head, hairs and bristles black all over the body.

**Head:** Head much broader than long, about 1.5 X of its width, antecular distance less than half of the length posterior of head including eyes, apex of head narrowly rounded, length of antecular distance 0.3 mm, posterior of head including eyes 1.2 mm, width of head 2.2 mm, interocular distance 1.3 mm.

**Thorax:** Pronotum almost rectangular shaped, anterior and posterior angles

Prominent, lateral margins sinuated, a large brown band on posterior margin, lateral lobes dark brown, width of pronotum about 1.5X of its length, length of pronotum 1.4 mm, width 2.1 mm.

**Legs:** Fore and hind tibiae with two unequal sized terminal spines, hind tibiae with four outer and three inner spines, first segment of hind tarsi with three spines.

**Abdomen:** Abdomen dilated, cerci large, length of abdomen 6.5mm. Total length of female 10.4mm.

**Female genitalia (Fig. 4):** Ovipositor short and broad, first valvulae shorter than second, flipper-like with outer margins convex, first valvulae having two teeth at inner margin with sub-acute apices, second valvulae with sub-rounded apices.

**Material examined:** Holotype female; Pakistan, Sindh, Thatta; on grass; 15-6-1999; leg. Nadeem Tamimi; lodged at Kamaluddin's collection; paratype 2 females; same data as holotype; lodged at Kamaluddin's collection.

**Comparative note:** This species is most closely related to *S. cylindrica* (Sp.nov) in having body testaceous or yellowish brown, antero-median margin of head medially produced, but it can easily be separated from the same in having body obovate with small and scarcely bristles, hind tibiae with 3-inner and 4-outer spines and by the other characters as in the key and description.

***Scottiola rufoverigata* Chopard**

**(Fig. 5)**

*Scottia rufoverigata* Chopard.1931.*Bull.Ruffels Mus.* No.6:

*Scottiola rufoverigata* Chopard 1969, *Faun.Ind.2*: 179.

**Colouration:** Body generally rufous, few black spots or bands on head and bristles brown or black all over the body, legs blackish.

**Head:** Head much broader than long, about 1.5 X of its width, eyes prominent antecular distance half of the length of posterior of head including eyes, apex of head with a notch, length of antecular distance 0.4 mm, posterior of head including eyes 0.8 mm, width of head 1.7 mm, interocular distance 1.0 mm.

**Thorax:** Pronotum almost rectangular shaped, anterior and posterior angles sub-prominent, lateral margins convex, width of pronotum about 1.5 X of its length, length of pronotum 1.1 mm, width 1.6 mm.

**Legs:** Fore and mid tibiae with two unequal sized terminal spines, hind tibiae with four outer and three inner spines, first segment of hind tarsi with 2 spines.

**Abdomen:** Abdomen broad at lateral sides, cerci medium sized, length of abdomen 5.0-mm. Total body length of male 7.8 mm.

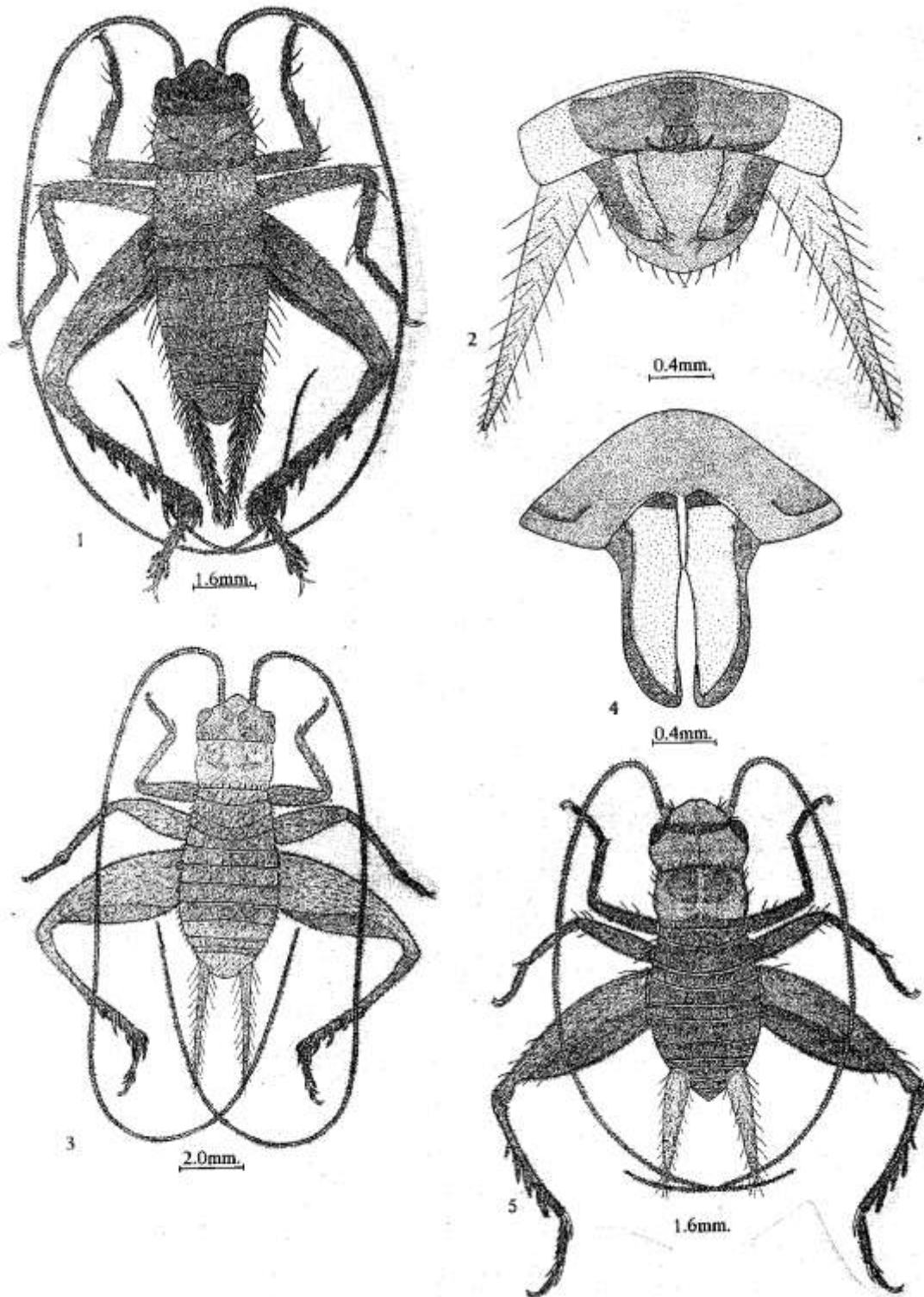


Fig. 1. *Scottiola cylindricus* (Sp.nov.): entire, dorsal view; Fig. 2. male genitalia, dorsal view.  
 Fig. 3. *S. oblongata* (Sp.Nov.): entire, dorsal view; Fig. 4. female genitalia, dorsal view.  
 Fig. 5. *S. rufoverigata* Chopard: entire, dorsal view.

**Male genitalia:** Reduced.

**Material examined:** 2 males; Pakistan: Sindh, Thatta; on grass; 15-6-1999; leg. Nadeem Tamimi; lodged at Kamaluddin's collection.

**Comparative note:** This species is most closely related to *cylindrica* (Sp.nov) and *oblongata* (Sp.nov) in having body somewhat depressed, head flattened above, pronotum with almost parallel sided, but it can easily be separated from the same in having body dark brown, antero-median margin of head medially notched, posterior tibiae with 3-spines on each margin and by the other characters as noted in the key and description.

## DISCUSSION

The representatives of the genus *Scottiola* Uvarov are distributed in southern, eastern and far eastern part of the world, like Seychelles Island, Chagos, Archipelago, Pakistan, India, Ceylon, Malaya, Samoa and Sarawak. Mostly they are inhabitant in dry grasses. This genus includes five species including three of them recorded from Pakistan viz. *S. minima* (Chopard), *S. ceylonica* (Chopard), *S. rufoverigata* (Chopard) and two new species *cylindrica* and *oblongata*.

Among the above five species, the *minima* plays out group relation ship in having posterior femora obliquely striated with brownish tinge on their external face and posterior tibiae adorned with three brown rings with sister groups relationship of other four species in which the *ceylonica* plays out group relationship in having head and pronotum convex above and body with uniformly brown with sister group relationships of rest of the three species. Among these *cylindrica* and *oblongata* play sister group relationship by having body colour testaceous or yellowish brown and antero-median margin of head medially produced an out group relationship with *rufoverigata* by body dark brown and antero-median margin of head medially notched.

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(Accepted for publication April, 2009)