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Review of the Oriental species of *Parastenichnaphes* FRANZ (Coleoptera: Scydmaenidae)

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ABSTRACT. The genus *Parastenichnaphes* FRANZ (Scydmaenidae: Scydmaeninae: Cyrtoscydmini) is redefined, and Oriental species are reviewed. *Parastenichnaphes sumatrensis* (FRANZ) from Indonesia and *P. ceylonensis* (FRANZ) from Sri Lanka are redescribed, a lectotype for the former species is designated, and important morphological characters (including aedeagi and spermathecae) are illustrated.

Key words: entomology, taxonomy, revision, Coleoptera, Scydmaenidae, Cyrtoscydmini, *Parastenichnaphes*, Orient.

INTRODUCTION

Parastenichnaphes FRANZ belongs to the tribe Cyrtoscydmini of the subfamily Scydmaeninae, and comprises three species distributed in southern Brazil, Sri Lanka and Sumatra (NEWTON & FRANZ 1998). The Brazilian species (*P. myrmecophilus* (FRANZ)) was originally placed in the genus *Alloraphes* FRANZ; the species from Sri Lanka (*P. ceylonensis* (FRANZ)) was described as the type species of the newly established genus *Stenichnaphes* FRANZ; and the one from Sumatra (*P. sumatrensis* (FRANZ)) as the type species of *Parastenichnaphes* FRANZ, a subgenus of *Stenichnaphes* (FRANZ 1980, 1982, 1984). Later, FRANZ clarified taxonomy of this group of genera, elevated *Parastenichnaphes* to the generic level, and gave more precise definitions of *Alloraphes*, *Stenichnaphes* and *Parastenichnaphes* (FRANZ 1989). It can be concluded from the brief descriptions given for *Stenichnaphes* and its subgenus *Parastenichnaphes* that the diagnosis of the latter was based on the sac-shaped, very simple aedeagus without parameres, sharp lateral edges of the pronotum, lack of the tempora, and presence

of the groove separating the occiput from the vertex (FRANZ 1982, 1984). Examination of the Oriental species of *Parastenichnaphes* has confirmed those characters as useful for defining the genus. In the present paper, a differential diagnosis of the genus is given, and the two Oriental species are redescribed. The generic position of the Brazilian species remains to be verified, as well as the status of some undescribed taxa from Kenya, mentioned (but not described) by FRANZ (1989), which according to him also belong to *Parastenichnaphes*.

The material used during this study is deposited in the Naturhistorisches Museum Wien (NMW), the Museum d'Histoire Naturelle, Geneva (MHNG), and in the private collection of the author (PCPJ).

TAXONOMY

Genus *Parastenichnaphes* FRANZ

Parastenichnaphes FRANZ, 1984: 90 (as subgenus of *Stenichnaphes*); type species: *Stenichnaphes sumatrensis* FRANZ, 1984 (des. orig.). Elevated to genus by FRANZ (1989).

DIAGNOSIS

The genus can be identified on the basis of the following characters: head without tempora, posterior margins of eyes adjacent to anterior margin of pronotum; maxillary palpi very long, about as long as half length of antennae; antennae slender, gradually thickening toward apex; pronotum with entire (i.e. not interrupted) basal groove and shallow lateral pits; basal foveae on elytra very small

1. *Parastenichnaphes sumatrensis* (FRANZ), lectotype female (actual length 0.92 mm). 2. *Parastenichnaphes ceylonensis* (FRANZ), paratype male (actual length 0.90 mm)

and shallow, barely visible; all coxae nearly contiguous; mesosternal process low (i.e. only slightly expanded ventrally); aedeagus sac-shaped, without parameres; spermatheca more or less spherical, with internal funnel-like cavity.

REDESCRIPTION

Body (Figs. 1, 2) small, around 1 mm in length, elongate, moderately slender and convex, light brown, covered with yellowish, short or very short, suberect setae. Head in dorsal view subtriangular, without tempora, with large, nearly circular and very convex eyes, moderately coarsely faceted, posterior margins of eyes are adjacent to anterior margin of pronotum; neck as broad as vertex; vertex broader than long, subtrapezoidal, delimited from small, subtrapezoidal frons by shallow postsupraantennal impressions; supraantennal tubercles barely marked; antennae (Figs. 3, 4) very slender, gradually thickened toward apex; maxillary palpi (Fig. 5) very long and slender, about as long as half length of antenna, palpomere I short, only slightly longer than broad, palpomere II elongate, broadest near distal third, about four times as long as broad; palpomere III enlarged, longer than II, broadest slightly distally to middle, palpomere IV elongate, subconical, acuminate.

Pronotum with rounded anterior margin, slightly concave lateral margins, nearly straight hind angles and slightly arcuate, convex basal margin; sides in posterior half with distinct lateral edges; base with shallow, distinct transverse groove connected at each side with small, shallow pit, additional pit is visible closer to lateral margin of pronotum, located further from basal margin than groove.

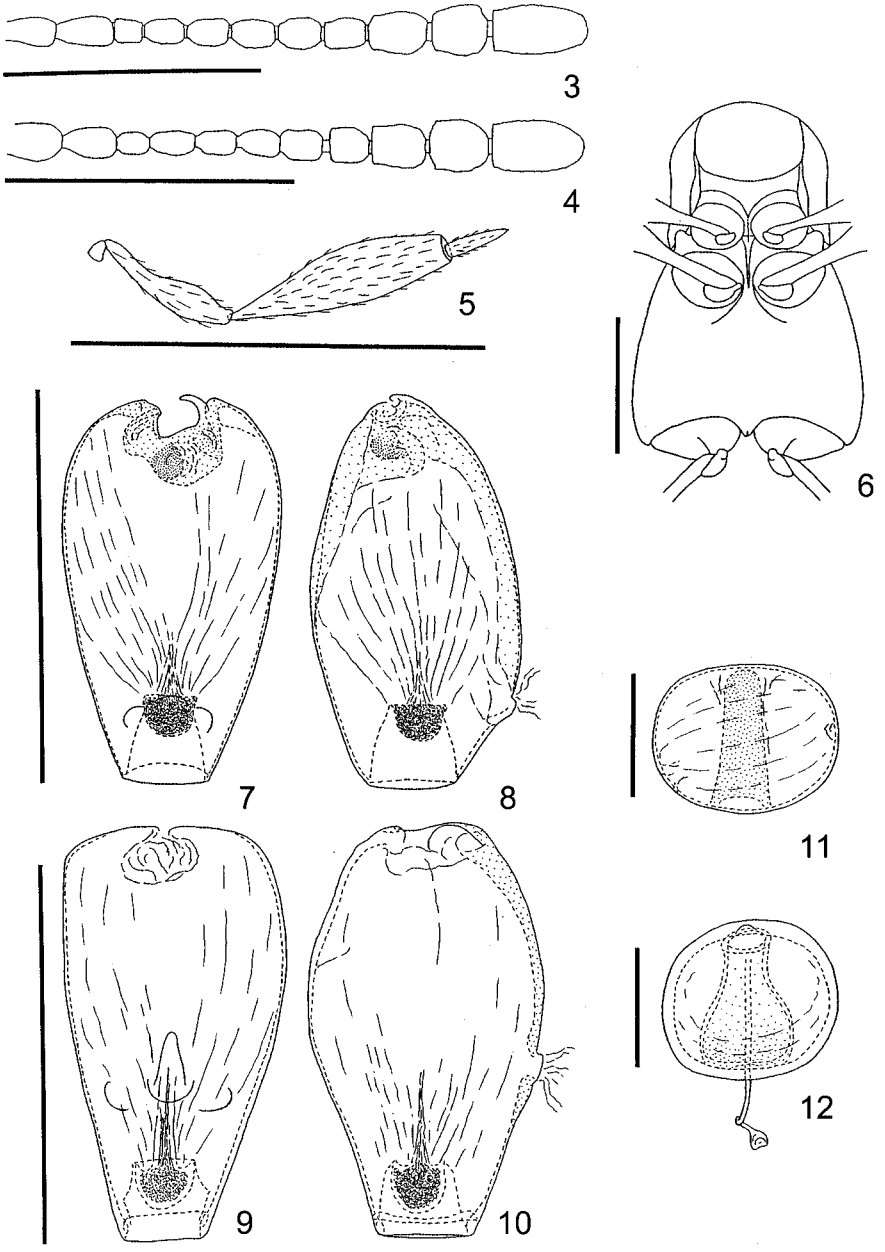
Elytra oval, more convex than pronotum; each elytron with slightly raised humeral callus and very small, sometimes hardly visible basal fovea. Scutellum visible, subtriangular. Hind wings well developed, in both studied species about twice as long as elytra.

Prosternum (Fig. 6) with moderately short basisternal part; mesosternum (Fig. 6) with narrow mesosternal process, which is only slightly expanded ventrally; metasternum (Fig. 6) with biemarginate posterior margin, posterior median expansion with short and narrow longitudinal notch.

Legs relatively slender, moderately long; all coxae nearly contiguous (Fig. 6); femora expanded in distal third; tibiae slender, straight, tarsi very long, longer than half length of tibiae.

Aedeagus (Figs. 7-10) relatively simple, lightly sclerotized, sac-like, with narrow base, rounded sides expanding toward apex and apical opening, without paramers; internal armature simple, composed of membraneous structures beneath apical opening, and basal funnel connected to a pileus-shaped structure, which is an attachment place for muscle fibers.

Spermatheca (Figs. 11, 12) capsular, oval, with internal funnel-like cavity; accessory gland and bursa copulatrix not found.



3, 6-8, 11. *Parastenichnaphes sumatrensis* (FRANZ); 4, 9, 10, 12. *Parastenichnaphes ceylonensis* (FRANZ); 3, 4 – left antenna in dorsal view; 6 – pro-, meso- and metasternum, ventral view, simplified; 7-10 – aedeagus in ventral (7, 9) and lateral (8, 10) views; 11, 12 – spermatheca (scale bars: 3-10 – 0.2 mm, 11, 12 – 0.05 mm)

REMARKS

Parastenichnaphes is most similar to *Neuraphes* THOMSON and *Scydmoraphes* REITTER. All three genera share the antennae gradually thickened toward apex, a similar general shape of the head; the pronotum with lateral edges and the antebasal groove; and a single basal fovea on each elytron. Besides, *Neuraphes* and *Parastenichnaphes* have similar, relatively simple aedeagi. The following characters can be used to distinguish between the three genera: i) *Neuraphes*: the basal groove on the pronotum interrupted in the middle by a gap or a short longitudinal carina; the maxillary palpi shorter than half length of the antennae; the basal foveae on the elytra large, distinct, filled with short and dense setae; the aedeagus with rudimentary, often barely noticeable parameres; the spermatheca elongate (known only in *N. nipponicus* FRANZ); ii) *Scydmoraphes*: the basal groove on the pronotum entire; the maxillary palpi shorter than half length of the antennae; the basal foveae on the elytra large, distinct, not filled with setae; the aedeagus with well developed parameres; the spermatheca elongate (also known and illustrated for a single species only, *S. japonicus* FRANZ); iii) *Parastenichnaphes*: the basal groove on the pronotum entire; the maxillary palpi very long, about as long as half length of the antennae; the basal foveae on the elytra very small and shallow, barely visible, not filled with setae; the aedeagus without parameres; the spermatheca more or less spherical.

The genus comprises three species; two of them have been reported to occur in the Oriental region, and can be determined on the basis of the following key:

KEY TO ORIENTAL SPECIES OF *PARASTENICHNAPHES* FRANZ

1. Pronotum slightly, but distinctly longer than broad. Sumatra. ..... *P. sumatrensis* (FRANZ)
–. Pronotum as long as broad. Sri Lanka. ..... *P. ceylonensis* (FRANZ)

Parastenichnaphes sumatrensis (FRANZ)

(Figs. 3, 6-8, 11)

Stenichnaphes (*Parastenichnaphes*) *sumatrensis* FRANZ, 1984: 91, fig. 2.
Parastenichnaphes sumatrensis FRANZ, 1989: 278.

DIAGNOSIS

This species can be identified on the basis of the shape of the pronotum, which is slightly longer than broad; the aedeagus or the spermatheca must be examined to confirm the species.

REDESCRIPTION

Male (Fig. 1). Body very small, 0.95 mm in length, relatively slender, shiny, yellowish-brown, legs, palpi and antennae slightly lighter, setation yellowish.

Head widest at large eyes, length 0.15 mm, width 0.20 mm; vertex subtriangular, about 1.5 times as broad as long, slightly convex, with pair of very shallow impressions just posterior to barely marked supraantennal tubercles, surface of vertex uneven, covered with dense, but very diffused punctures; frons subtrapezoidal, well delimited from vertex, convex and smooth, with extremely fine, sparse punctures. Both vertex and frons with very short and sparse, barely noticeable setae. Antennae (Fig. 3) very slender, thin, 0.45 mm in length.

Pronotum slightly longer than broad, length 0.25 mm, width 0.22 mm; with rounded anterior margin, slightly concave lateral margins, nearly straight hind angles and arcuate, convex basal margin. Base with shallow, but well visible transverse groove connected at each side with small, shallow pit, and with additional small lateral pit adjacent to edge of pronotum, located distinctly further from base than groove. Disc with moderately sparse, fine punctures (noticeable under magnification 40x) and very short, moderately sparse, suberect to erect setae.

Elytra oval, more convex than pronotum, widest distinctly anterior to middle, length 0.55 mm, width 0.40 mm, EI (i.e. elytral index = length/combined width) 1.37. Each elytron with small, only slightly raised humeral callus, shallow internal humeral impression and very shallow, barely noticeable basal pit located slightly closer to humerus than to small subtriangular scutellum, which is wider than long. Elytral punctation similar to that on pronotum; setation slightly longer, moderately sparse, suberect. Hind wings well developed.

Aedeagus (Fig. 7, 8) 0.20 mm in length, in dorso-ventral view with a single, distinct hook-like projection protruding from apical opening.

Female. Externally indistinguishable from male. Body length 0.91-0.95 mm (mean 0.93 mm), length of head 0.14-0.15 mm (mean 0.15 mm), width of head 0.19-0.20 mm (mean 0.19 mm), length of antenna 0.40-0.42 mm (mean 0.41 mm), length of pronotum 0.25 mm, width of pronotum 0.20-0.22 mm (mean 0.21 mm), length of elytra 0.52-0.55 mm (mean 0.53 mm), width of elytra 0.37-0.40 mm (mean 0.39 mm), EI 1.37-1.40.

Spermatheca (Fig. 11) small, ovoid, 0.07 mm in diameter, with relatively narrow, subcylindrical internal cavity.

TYPE MATERIAL

Lectotype (female): white printed label „lg. Klapperich, Juli-Aug. 1983", white printed label „Sumatra, Babahrot", red handwritten label „Syntypus", white label with handwritten „St. Parastenichnaphes sumatrensis m." and printed „det. H. Franz" (NMW). Lectotype designated herein (see remarks below), labeled with red printed label „*PARASTENICHNAPHES sumatrensis* (Franz), LECTOTYPUS, des. P. Jałoszyński". Paralectotypes: 2♂♂, 2♀♀, same data; one male labeled „Syntypus" by Franz, remaining specimens with yellow labels with handwritten „St. Parastenichnaphes sumatrensis m." and printed „det. H. Franz, PARATYPUS (sic!)"; in one female the abbreviation „St." is replaced by „Stenichnaphes" (NMW). Paralectotypes labeled during the present study with yellow printed

labels „*PARASTENICHNAPHES sumatrensis* (Franz), PARALECTOTYPUS, des. P. Jałoszyński".

DISTRIBUTION

Indonesia: W Sumatra.

REMARKS

FRANZ (1984) in the original description mentioned five specimens collected by J. KLAPPERICH on 20 VIII 1983 in Babahrot (W Sumatra), from leaf litter and rotten wood. Labels of the type specimens read only „Juli-August 1983", but these are undoubtedly the same five individuals used for describing the species. FRANZ stated that the illustrated and described aedeagus was extracted from a specimen which was heavily damaged during the study, and the general morphology was therefore based on another specimen. Both individuals were labeled by FRANZ as syntypes, as stated in the original description. However, the remaining three specimens bear labels with printed „paratypus". Since all five specimens were mentioned in the original description, and a holotype was not been designated, they all should be treated as syntypes. The male partly damaged by FRANZ, on which the illustration and description of the aedeagus was based, was found to be in a very fragile condition. Only the head, a part of the thorax and one elytron remained. The specimen was mounted in such a way that the species cannot be identified. It was not remounted during the present study to avoid further damage. The remaining male in the type series is partly disarticulated. Therefore, the best preserved female (the only complete specimen in the type series) with well visible specific characters was selected to designate a lectotype to become the unique bearer of the name. This female is the same specimen which was used by Franz to describe the morphology, and originally labeled by him as a syntype.

Parastenichnaphes ceylonensis (FRANZ)

(Figs. 4, 5, 9, 10, 12)

Stenichnaphes ceylonensis FRANZ, 1982b:135, fig. 10
Parastenichnaphes ceylonensis FRANZ, 1989: 278.

DIAGNOSIS

This species is externally nearly identical to *P. sumatrensis*; it differs in proportions of the pronotum, which is about as long as wide, and the elytral index, which is distinctly lower. Examination of the aedeagus or the spermatheca is necessary for species confirmation.

REDESCRIPTION

Male (Fig. 2). Body shape, pigmentation, punctation and setation very similar to those in *P. sumatrensis*; only differences are described below. Body length 0.86-0.99 mm (mean 0.93 mm), length of head 0.12-0.17 mm (mean 0.15 mm),

width of head 0.19-0.20 mm (mean 0.20 mm), antenna as in Fig. 4, length 0.37-0.42 mm (mean 0.40 mm), pronotum broader, as long as wide, length 0.22-0.25 mm (mean 0.24 mm), width 0.22-0.25 mm (mean 0.24 mm), elytra with slightly more distinct basal foveae, slightly broader and with slightly longer setation, length 0.52-0.57 mm (mean 0.54 mm), width 0.40-0.45 mm (mean 0.41 mm), EI 1.27-1.30.

Aedeagus (Figs. 9, 10) very similar to that of *P. sumatrensis*, 0.22 mm in length, in dorsal view with less rounded sides and tapered apex, without tooth-like projection at apical opening, in lateral view broader, with ventral opening located closer to the middle than that in the previous species.

Female. Externally indistinguishable from male. Body length 0.15 mm, length of head 0.20 mm, width of head 0.25 mm, length of antenna 0.37-0.40 mm (mean 0.39 mm), length of pronotum 0.25 mm, width of pronotum 0.24-0.25 mm (mean 0.25 mm), length of elytra 0.55-0.57 mm (mean 0.56 mm), width of elytra 0.45 mm, EI 1.22-1.27.

Spermatheca (Fig. 12) 0.07 mm in diameter, nearly spherical, with bell-shaped internal cavity.

TYPE MATERIAL

Paratypes: 2♂♂, 1♀, white label with printed on top „CEYLAN", on bottom „R. Mussard", and handwritten in between „-65 [i.e. 1965], Anuradhapura, 23 I - 150 m", yellow label with handwritten „Stenichnoraphes (sic!) ceylonensis m." and printed „PARATYPUS"; 1♂, 3 exx., white label with printed on top „CEYLAN Northern", on bottom „MUSSARD BESUCHET LÖBL" and handwritten in between „Mullaitivu, 6.2.70"; 1♂, white label with printed on top „CEYLAN Central", on bottom „MUSSARD BESUCHET LÖBL" and handwritten in between „Dambulla, 17. I. 70", additionally with small label written in pencil „5. Dambulla" and on the reverse side „Neuraphes" (sic!) and another handwritten label with „?ceylonensis"; 1♂, white label with printed on top „CEYLAN Central", on bottom „MUSSARD BESUCHET LÖBL" and handwritten in between „Medawachchia, 6.2.70"; 5♂♂, 2♀♀, 9 exx., white label with printed on top „CEYLAN North Central", on bottom „MUSSARD BESUCHET LÖBL" and handwritten in between „Mihintale, 7.2.70", one specimen with additional label written in pencil „52 Mihintale", another one with label reading „Stenichnoneuraphes (sic!) ceylonensis m. det. H. Franz"; 1♂, white label with printed on top „CEYLAN Central", on bottom „MUSSARD BESUCHET LÖBL" and handwritten in between „Matale, 17. I. 70". Paratypes in MHNG and PCPJ; all paratypes were labeled during the present study with white printed labels „*PARASTENICHNAPHES ceylonensis* (Franz), det. P. Jałoszyński, 2005, PARATYPUS".

DISTRIBUTION

Sri Lanka.

REMARKS

Holotype of this species has not been studied. However, most paratypes come from the same locality as the holotype, i.e. Mihintale in the northern-central part of Sri Lanka, and were collected on the same day. Specimens recognized as paratypes of *Stenichnaphes ceylonensis* preserved in MHNG bear labels reading „*Stenichnoraphes*" or even „*Stenichnoneuraphes*". Those names have never been published and are not valid. Only three specimens were originally labeled by FRANZ as paratypes, but all 26 specimens match the collecting data given in the original description, and they undoubtedly are paratypes. A single specimen was labeled „?ceylonensis", but it was included in the type series. The identity of this specimen as belonging to *P. ceylonensis* was confirmed during the present study.

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