

The first description of the male and egg of *Syringodes rubicundus* (de Haan, 1842) (Phasmida: Diapheromeridae: Necrosiinae)

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Bragg, P.E. The first description of the male and egg of *Syringodes rubicundus* (de Haan, 1842) (Phasmida: Diapheromeridae: Necrosiinae).

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The female of *Syringodes rubicundus* (de Haan, 1842) (Diapheromeridae: Necrosiinae) from Borneo is redescribed, and the egg and male are described and illustrated for the first time.

Introduction

The genus *Syringodes* Redtenbacher, 1908, was established for *S. pallidus* Redtenbacher, 1908, from Amboina, and *S. rubicundus* (de Haan, 1842) from Borneo. Subsequently two more species have been described, both from Borneo: *S. bonarellii* Gigliot-Tos, 1910, and *S. viridimaculatus* Günther, 1943. *Syringodes viridimaculatus* was described from a male and female, the other three species are known only from the female. No eggs have been described from *Syringodes*.

The RMNH collection contains a large number of Necrosiinae from Kalimantan, and also includes the type material described by de Haan in 1842 (Bragg, 1996). The collection was found to contain males and females of *S. rubicundus*; a female was compared with de Haan's holotype. A pair of specimens was borrowed from RMNH, these were reset and eggs were removed from the body of the female. The female is redescribed, and the male and egg are described here for the first time; the female, male and egg are illustrated. The measurements in table 1 were made using electronic callipers and were taken from Siebers' specimens only, not the holotype.

Table 1. *Syringodes rubicundus*. Measurements in mm.

	♂	♀		♂	♀
Total length	45	75	Fore femur	14.2	18.5
Antenna	>46	>59	Fore tibia	11.9	15.7
Head	2.6	4.0	Fore tarsus	7.0	10.0
Pronotum	2.5	4.4	Mid femur	8.5	10.8
Mesonotum	6.1	9.3	Mid tibia	7.8	9.9
Metanotum	4.7	7.1	Mid tarsus	4.5	6.1
Median segment	2.9	6.1	Hind femur	13.8	20.9
Fore wing	3.7	7.5	Hind tibia	13.5	18.2
Hind wing	26	46	Hind tarsus	7.1	9.3

***Syringodes* Redtenbacher, 1908**

Syringodes Redtenbacher, 1908: 491; Bragg, 2001: 606; Otte & Brock, 2005: 329. Type species: *Syringodes pallidus* Redtenbacher, 1908 by subsequent designation of Zompro, 2004: 322.

Diagnosis.— Anareolate: Diapheromeridae: Necrosiinae. Base of fore femur compressed and incurving. All legs with distinct carinae. Anterior of mesonotum distinctly narrower than posterior. Both sexes with tegmina and fully winged. Head, body and legs without significant lobes or spines. Female with an appendicular ovipositor. Eggs cylindrical with a pointed polar end.

There are four described species; the type species is known only from Amboina, the other three are endemic to Borneo.

Syringodes rubicundus (de Haan, 1842)

Phasma (*Necrosia*) *rubicundum* de Haan, 1842: 120, pl. 12.2 (♀); Bragg, 1996: 114. Holotype, ♀ (RMNH) Kalimantan, Pontianak.

Necrosia rubicunda; Westwood, 1859: 148.

Trigonophasma rubicunda; Kirby, 1904: 372.

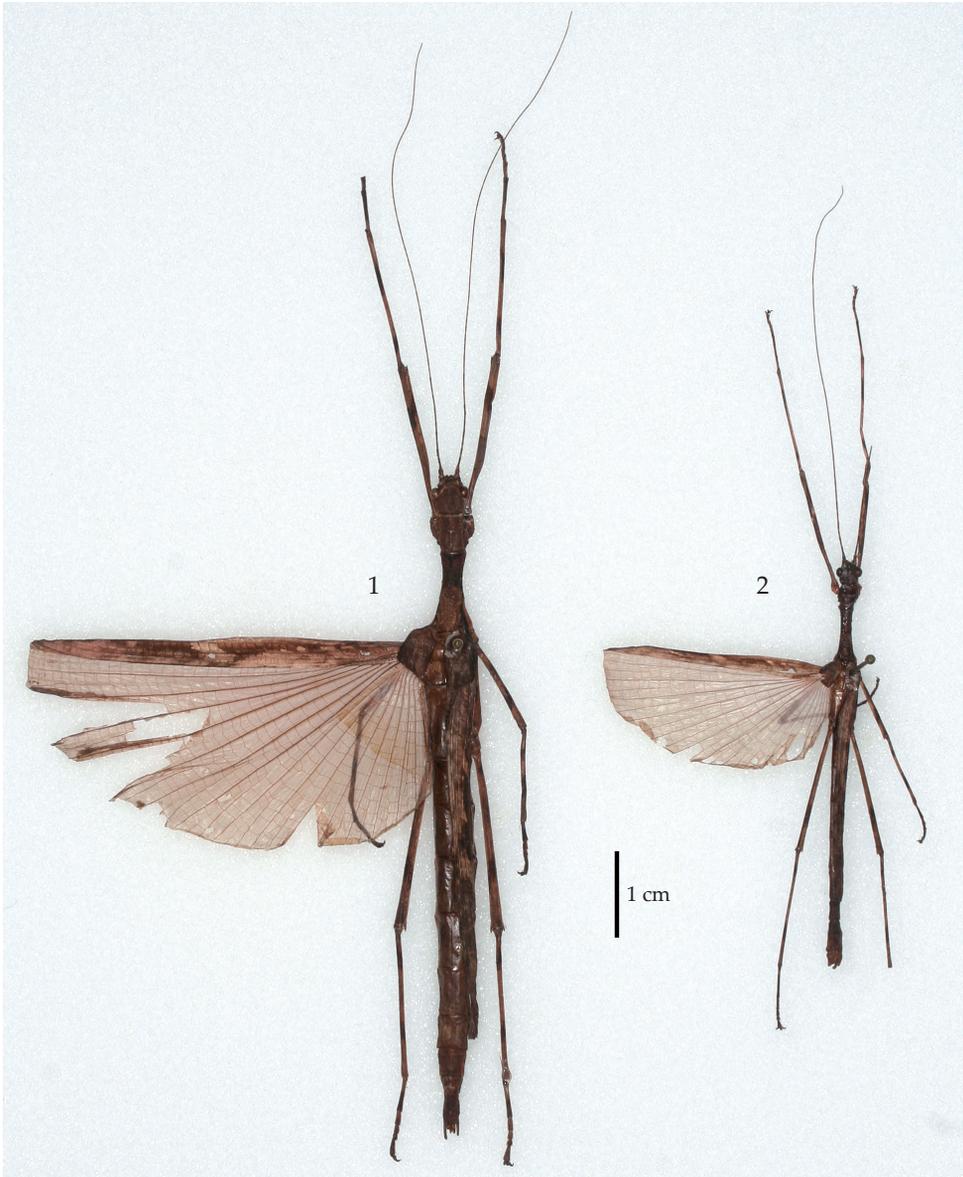
Syringodes rubicundus; Redtenbacher, 1908: 492, pl. 24.8 (♀); Bragg, 2001: 606; Otte & Brock, 2005: 329.

Material.— Kalimantan, Pontianak: holotype, ♀ (RMNH). Kalimantan, Midden O-Borneo: ♂ (RMNH), 7.x.1925, H.C. Siebers. ♀ (RMNH), 8.x.1925, H.C. Siebers.

Female (figs 1, 3-6).

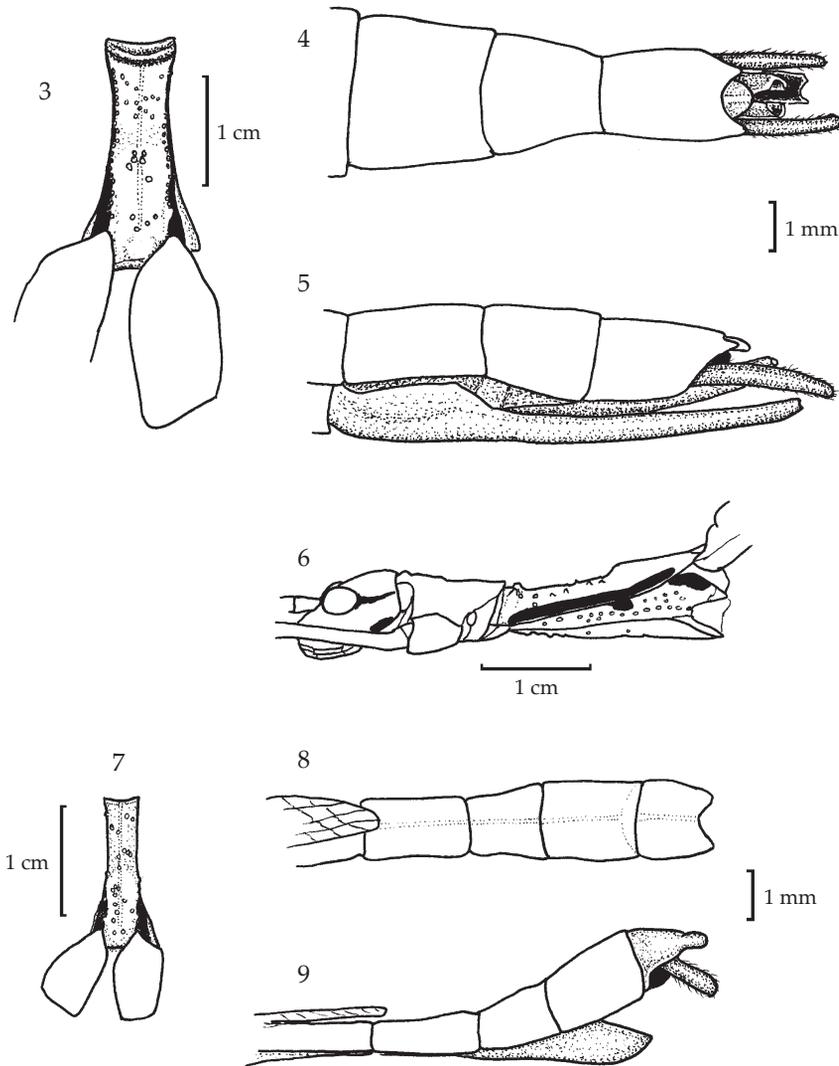
Colour.— Body and legs mid-brown, with dark brown or black markings on legs, mesothorax, and metapleura; costal region of wings mid- dark- and light-brown. Head mid-brown with two short darker brown stripes behind each eye. Antennae mid-brown with darker brown blotches. Mesonotum with most of the anterior margin, and all of the lateral margins, black. Mesopleura with black blotches: one in the middle of the dorsal margin, and one at the dorso-posterior corner. Mesosternum mostly dark brown. Metapleura with two small, narrow, black blotches: one in the middle of the dorsal margin, the second at the posterior of the dorsal margin. All tibiae and femora with two more or less evenly spaced dark brown blotches; these are less distinct on the femora and do not all extend to the ventral surface. Tarsi with a dark brown blotch. Costal region of hind wings mid-brown, with dark and creamy-brown blotches. Anal region of hind wings translucent brown, with brown veins; the anal region of the holotype is pinkish with brown veins. Elytra with a black leading edge that continues the stripe on the lateral margin of the mesonotum.

Morphology.— Head almost flat, depressed between the eyes, and with a narrow central longitudinal depression at the rear. Eyes projecting sideways, not upwards. Pronotum almost rectangular, but with posterior margin slightly curved; 1½ times longer than wide; slightly granulose. Mesonotum very granulose; constricted in the middle; with a raised swelling just after the mid point (fig. 6). Abdominal segments 1-6 of similar length, 7th two-thirds as long as 6th, 8-10th each about half as long as 6th; Segments 2-7 narrowing slightly, 8-9 narrowing quickly, 10th of uniform width (fig. 4). Posterior margin of 10th segment deeply indented in the middle with a triangular projection on each



Figs 1-2, *Syringodes rubicundus*, ♀ (1) or ♂ (2). 1, 2, Habitus.

side; 11th carinate, projecting only slightly beyond the apices of the 10th. Cerci long, slender, cylindrical, straight, projecting beyond the end of the operculum. Operculum long, slender, with an apical notch; protruding beyond the end of the anal segment; gonapophyses projecting beyond the anal segment, about half as far as the operculum. Legs without any spines except the pointed apices of the ventral carinae. Femora slightly longer than the corresponding tibiae. Basal tarsomere about as long as combined length



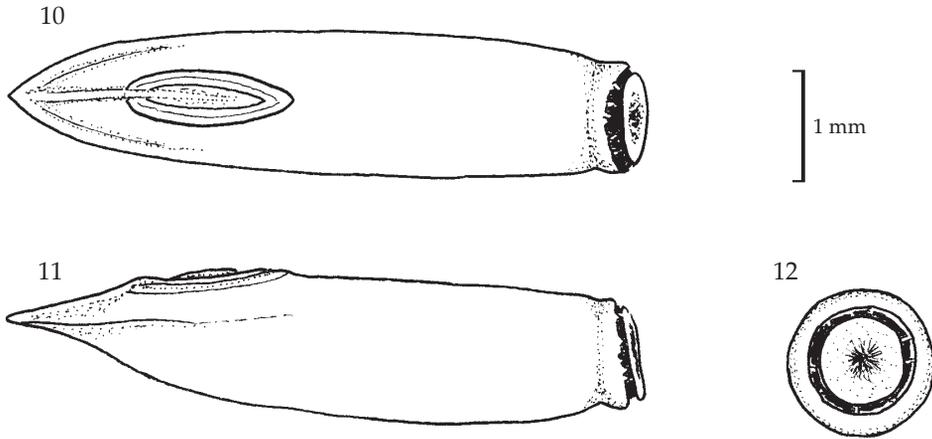
Figs 3-9, *Syringodes rubicundus*, ♀ (3-6) or ♂ (7-9). 3, 7, Mesonotum; 4, 8, abdomen, dorsal aspect; 5, 9, abdomen, lateral aspect; 6, thorax, lateral aspect.

of tarsomeres 2-5 on fore leg; $\frac{1}{2}$ as long on mid leg; $\frac{3}{4}$ as long on hind leg. Wings reaching almost to the end of the 7th abdominal segment.

Male (figs 2, 7-9).

Colouration as in the female.

Morphology.— Head flat, without granules. Eyes projecting sideways. Pronotum 1.5 times longer than width of anterior margin; trapezoidal, narrowest at the posterior; with only a few small granules. Mesonotum similar to female but not as strongly con-



Figs 10-12, *Syringodes rubicundus*, egg. 10, dorsal aspect; 11, lateral aspect; 12, opercular aspect.

stricted (fig. 7). Abdominal segments 1-5, of similar length and width; 6th & 7th narrowing, 6th is $\frac{3}{4}$ as long as 5th, 7th is about $\frac{1}{2}$ as long as 5th, 8th widening, as long as 7th but slightly shorter; 9-10 as wide as 5th, 9th as long as 7th, 10th as long as 8th. Segments 7-10 with a slight median longitudinal carina. Anal segment (10th) with a shallow "V" shaped apical notch. Cerci straight, cylindrical. Poculum moderately shallow, posterior half shiny. Vomer with a single point. Femora and tibiae as in female. Basal tarsomere about as long as combined length of tarsomeres 2-5 on fore leg; about two thirds as long on mid leg; of equal length on hind leg. Wings reaching very slightly beyond the end of the 6th abdominal segment.

Egg (figs 10-12).

Three obviously well-developed eggs were removed from the body of Siebers' specimen (8.x.1925). Capsule long, cylindrical, tapering to a point at the polar end; opercular end with a collar; surface finely rugulose, dark brown (although this may be a result of preservation). Operculum with a thin, flat umbrella-like pseudocapitulum as large as the operculum. Micropylar plate a narrow oval, near the polar end. Polar end with lateral ridges. Length 5.3 mm, height 1.2 mm, width 1.2 mm; Operculum circular, diameter 0.8 mm.

Discussion

The anal region of the wings of the holotype is pinkish, with brown veins. The male and female collected by Siebers lack any pink when viewed in daylight or under normal electric lighting. However, flash photography shows they have a very slight pinkish tinge. Pink on the wings of phasmids is a colour that is easily lost: in this case colour loss could be due to the original method of preservation, or possibly by the use of warm water to relax and reset the specimens. There is also the possibility that the colour of the anal region is variable in this species.

The position of *S. rubicundus* was previously unclear because Kirby (1904: 372) placed it in *Trigonophasma* Kirby, 1904 (now a synonym of *Marmessoidea* Brunner, 1893); Redtenbacher (1908: 492) (unaware of *Trigonophasma*) placed *rubicundus* in *Syringodes* Redtenbacher, 1908. Examination of photographs of the type species, *Syringodes pallidus* Redtenbacher, 1908, confirm that the general form of *rubicundus* is similar. The egg of *pallidus* is unknown but that of *rubicundus* is completely different to that of the type species of *Trigonophasma* (*Necrosia rubescens* de Saussure, 1868); the latter species has an egg that is roughly cuboidal and is glued to leaves. Furthermore, both the male and female of *rubicundus* have very similar forms to Günther's types of *Syringodes viridimaculatus* which are also in the RMNH collection.

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