A NEW PHYLLOPHORA (ORTHOPTERA, TETTIGONIIDAE, PHYLLOPHORINAE) FROM NEW GUINEA

by

C. DE JONG
Rijksmuseum van Natuurlijke Historie, Leiden

Only part of the very extensive entomological collections made in New Guinea during various expeditions by Dutch scientists has so far been studied, but this already yielded many new species.

A first superficial survey of the Orthoptera in these collections provided a number of specimens of a species of *Phyllophora,* which proved distinct from any of the forms described before. As I believe the species to be new to science, it is described here as *Phyllophora boschmai* nov. spec., and named in honour of Professor Dr. H. Boschma, who for many years was my teacher and director at the Rijksmuseum van Natuurlijke Historie, and to whom I owe many thanks for his practical advices during my studies.

The greater part of the specimens mentioned here have been collected by Professor Boschma himself in his function of zoologist of the 1939-1940 expedition of the Koninklijk Nederlandsch Aardrijkskundig Genootschap (Royal Netherlands Geographic Society) to Central New Guinea.

All the material dealt with was obtained in the Wissel Lakes area in the Central Mountains range of New Guinea (roughly at 136° 20′ E 3° 55′ S); the localities are indicated on the map in Dr. Boschma's (1943, p. 506) general account of his activities as a zoologist of the just mentioned expedition.

Phyllophora boschmai nov. spec.

Material. — 10 ♀♀ and 13 ♂♂, Paniai Lake, 22 August-15 November 1939, H. Boschma; 1 ♀ and 1 ♂, Bivak Araboe, 1-5 October 1939, H. Boschma; 3 ♀♀ and 1 ♂, Enarotali, Paniai Lake, 13 July 1952, W. J. Roosdorp; 1 ♀, Enarotali, Paniai Lake, 5 January 1955, L. D. Brongersma c.s. (all syntypes).

In all, 15 ♀♀ and 15 ♂♂ of this species could be studied, a fairly extensive series, considering that generally only very limited numbers of Phyllophorids are found in collections. Many species have been described from one or two specimens only.

The present species is found neither in Karny's (1924) keys nor in the

other papers that I could study on the subject. As far as I know this is the smallest Phyllophorid ever seen by me, measuring from the frons to the tip of the tegmina (closed): in the males from 34 to 43 mm, in the females from 34 to 45 mm. At first sight the sizes of the males and the females appear very similar, but as shown by the graph of fig. 1 the males have their optimum between 37 and 38 mm, whereas that of the females is found between 41 and 42 mm. Nevertheless the entire material gives a very homogeneous impression.

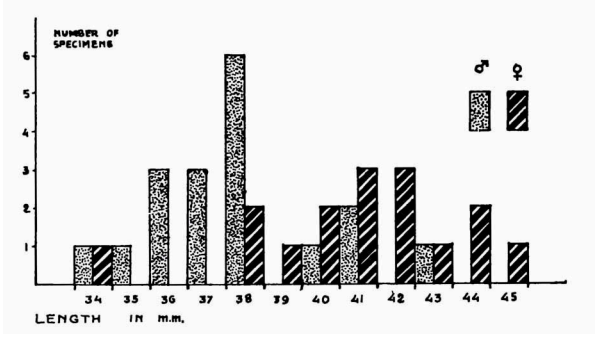

Fig. 1. *Phyllophora boschmai* nov. spec. Graph showing the total length of males and females.

The general characters of the new species are those of *Phyllophora*. The colour is green in the fresh specimens, a lively oak leaf green; but in a number of specimens this colour got lost after death and has turned to a yellowish or sometimes more reddish light brown. In some specimens the green colour can still be recognized in parts of the tegmina. The tegmina in a number of specimens, in males as well as in females, show white "erosion patches", generally at the base of the tegmina, but sometimes there are additional smaller spots, that are situated in the cell-centres.

As a rule the females are bigger than the males, as is shown in fig. 1, the tegmina are also somewhat broader in the females (see graph in fig. 2), and the pronotum too shows enough differences to separate the sexes at a mere glance (graph in fig. 3).

The general shape of the tegmina is characterized by the rather faintly curved anterior border and the strongly bent, almost semicircular posterior border. The apex shows a rather abrupt curve (fig. 4a, f).

The venal pattern of the tegmina is of the type common in the genus. S2 and R run together straight from the base to a point close to the apex of the tegmen. S2 terminates in the anterior border at a short distance from the apex, the R vein ends in the apex. Furthermore there are the

three Rs veins, of which the first is connected with the first medialis over a short distance.

The head is as broad as the anterior border of the pronotum. The face is strongly punctate up to the blunt tubercles between the antennal scrobes, which themselves are smooth. Behind the here mentioned tubercles there are groups of punctures found at the left and at the right on the vertex. Towards the occiput the vertex is smooth. Labrum, clypeus, and palpi are light green; sometimes the labrum is bordered with a somewhat darker shade.

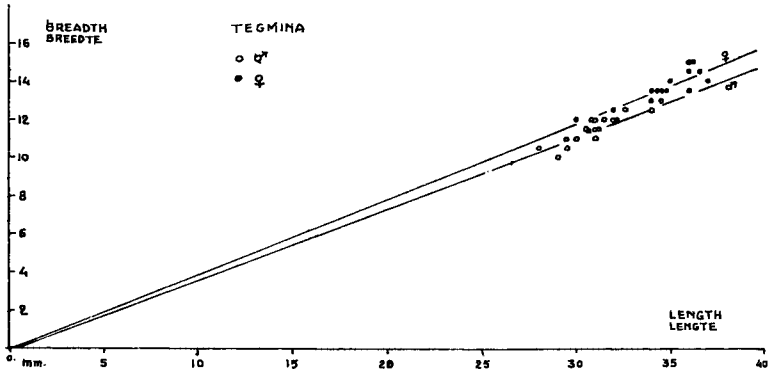

Fig. 2. *Phyllophora boschmai* nov. spec. Graph comparing the relative length and breadth of males and females.

The antennae are damaged in most specimens. However, in a number of cases they are still intact. In the females they are about as long as the entire animal, just surpassing the elytral apex (closed). In the males they are longer, about 1.5 times the total length. The colour is light green.

A very striking character is provided by the relatively long and sharp humeral thorns which are directed slightly upwards, and in most cases also faintly forward, in contradistinction to the lateral thorns or spines in most other species of the genus, in which they are directed sideways. In addition the dorsal surface between the humeral spines is more or less concave when seen in front. As a general feature a faint longitudinal impression is found all over the metazona of the pronotum, in the males as well as in the females.

When further comparing males and females we find that in the females the prothorax is somewhat broader than in the males (graph of fig. 2).

As in the study of the Phyllophorinae much attention is paid to the number of spines, thorns or tubercles found on the various parts of the pronotum, I made a list to get a survey of the situation in the present

species. In the formulae which I use for the purpose the indication (3 and 4) stands for three strong spines on the left and four on the right, (2 + 1 and 1 + 3) stands for 2 strong and one small spine on the left and one strong and 3 small spines on the right. On the prozona the mean value is (3 and 3) for the males, and (4 and 4) for the females. However,

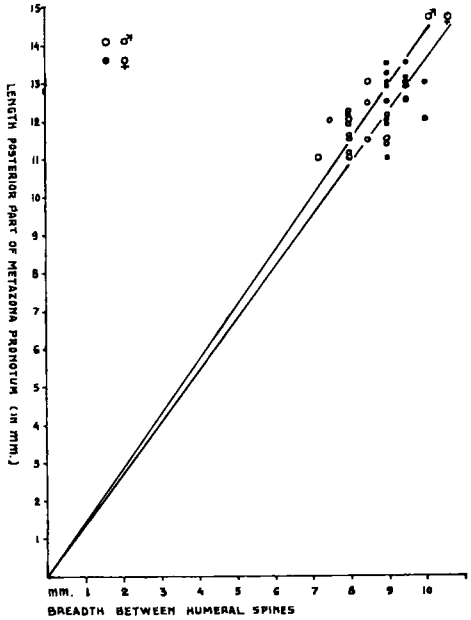

Fig. 3. *Phyllophora boschmai* nov. spec. Graph showing the differences in the pronotum of males and females.

all sorts of combinations are found, e.g., (4 + 1 and 5) ♀, (3 + 1 and 3 + 2) ♂, which clearly shows the great variability of the numbers and size of the spines. The numbers of spines on the mesozona, however, are more constant, being in both sexes (3 and 3) with only a few aberrations: 2 + 3, 3 + 1, or 2 + 2 instead of 3. On the mesozona the hindmost spine is always the strongest. The armament of the anterior part of the metazona consists of a lateral row of tubercles, intermingled with crenules; here too left and right are often different and all sorts of combinations are found, e.g., sometimes there is a complete row of rather strong subequal spines (10) with only a few small tubercles at the base of the humeral thorn; often 7 or 8 strongly developed spines are found with small ones in between; sometimes the spines stand in small groups of one big with 2 small ones, etc.; 12 to 15 moderately strong and subequal spines are found in many specimens. On the lateral borders of the metazonal posterior region a similar

situation is found; more or less irregular rows of larger and smaller tubercles at the base, changing to a more regular row which terminates before the rounded apex. The posterior part of the metazona is about 1.5 times as long as the breadth between the humeral spines, tapering evenly towards

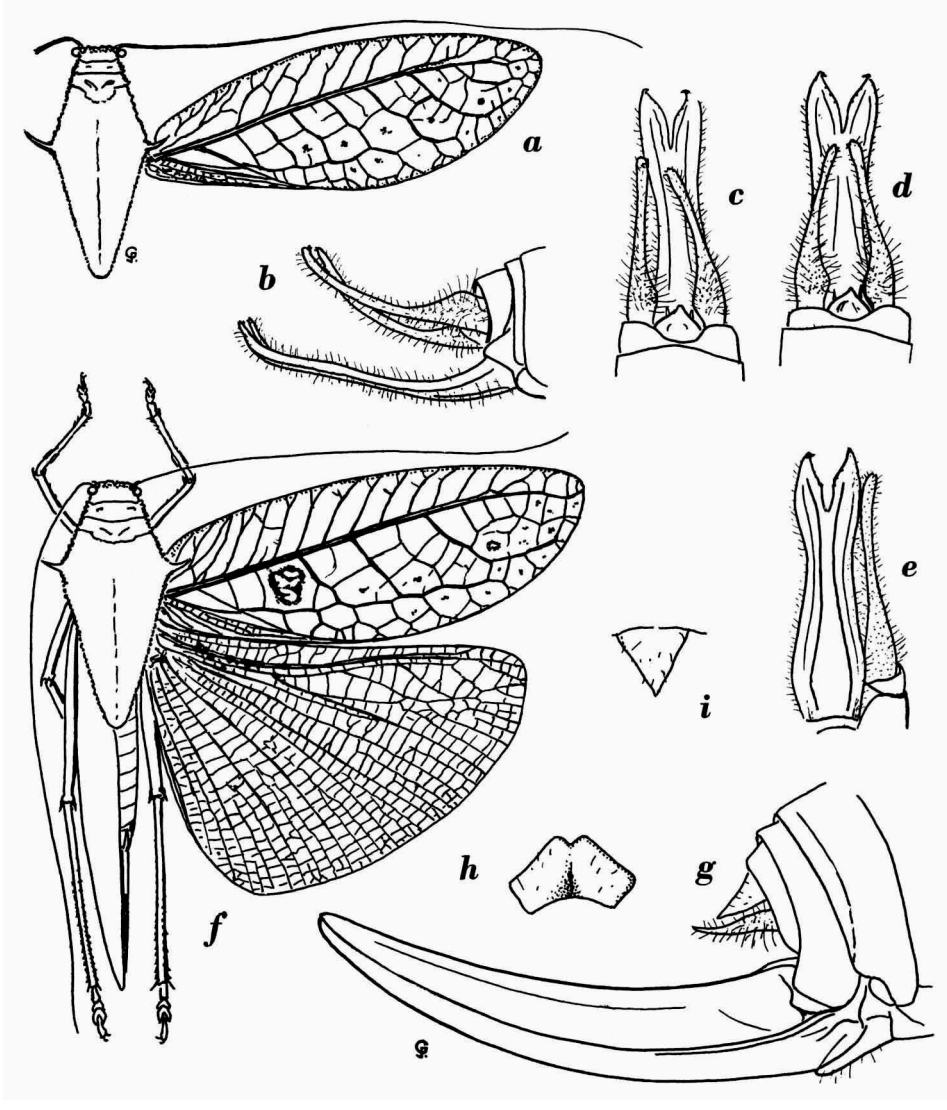

Fig. 4. *Phyllophora boschmai* nov. spec. a, pronotum, head and right tegmen of male; b, abdominal appendages of male, lateral view; c, d, same, dorsal view; e, same, ventral view; f, dorsal view of female; g, abdominal appendages of female, lateral view; h, subgenital plate of female; i, supra-anal plate of female. a, f, × 1.5; b-e, g-i, × 6.

the apex. Generally the apex is rounded, but here also individual variation is met with: in 4 cases the apex shows an unimportant incision, while in 9 specimens it forms a faint blunt angle.

The lateral surfaces of the pronotum are rather strongly and evenly punctulated, except the extreme borders which are smooth. The posterior border of the lateral lobes shows a distinct lobe as is usual in the genus. The ventral borders are distinctly crenulated even before the anterior angle on the anterior border.

The dorsal surface of the pronotum is distinctly punctate, coarsely so on prozona and mesozona, less distinct on the metazona, and almost vanishing near the apex.

The prosternum is bituberculate. The meso- and metasternum show foliaceous oval lobes which terminate posteriorly into a rectangular apex. The metasternal lobes show some granulations on the dorso-lateral margins, best seen in lateral view. I did not find any stridulating organs.

The female abdomen (fig. 4g) bears an ovipositor, which is moderately long, faintly curved upwards, unicolorous like the abdomen, and nearly parallel-sided. The length of the ovipositor is 12 to 15 mm, its mean value 13.5 mm. The subgenital plate is broadly triangular, incised at the top (fig. 4h). The cerci are almost straight, slender, and without a terminal spine. The supra-anal plate is slender, tapering into a rather sharp apex (fig. 4 i).

The male abdomen (fig. 4 b-e) bears the rather strong subgenital plate, which is slightly broadened at the base, but diminishes in width within the basal two fifths of its length. Then it stretches more or less parallel-sided towards the deeply incised top. The lobes show some indistinct crenulations along the incision. Each bears a minute stylus and ends in a small spine. The cerci are rather strong, somewhat inflated near the base, shorter than the subgenital plate, faintly curved upwards, and ending in a distinct, thin, cleft spine pointing upward. The supra-anal plate is more or less oval with some dorsal impressions, caudally tapering into a short projection (fig. 4 c, d).

The legs are as is normal in the genus, showing variations in the number of spines, but the position of the groups of spines is rather well defined. All femora are smooth dorsally. Ventrally they bear rather strong spines in the apical part of the ribs, the row giving the impression of beginning at the distal end and diminishing in strength towards the base. I may remark here that often one or more spines are missing in such rows, which is especially obvious in short rows. The following combinations in the arrangement of the spines are met with: 4 spines, 3 spines and a small one, first and last (= fourth) spine stronger with two small ones in between, 3 spines,

2 spines and a small one, one strong spine between two small ones or just the other way around, etc. Also in a long row of spines one or more may be missing at the normal places, or such spines may be replaced by a small spinule. Moreover, in the larger specimens the number of spines may be somewhat higher than in the small ones.

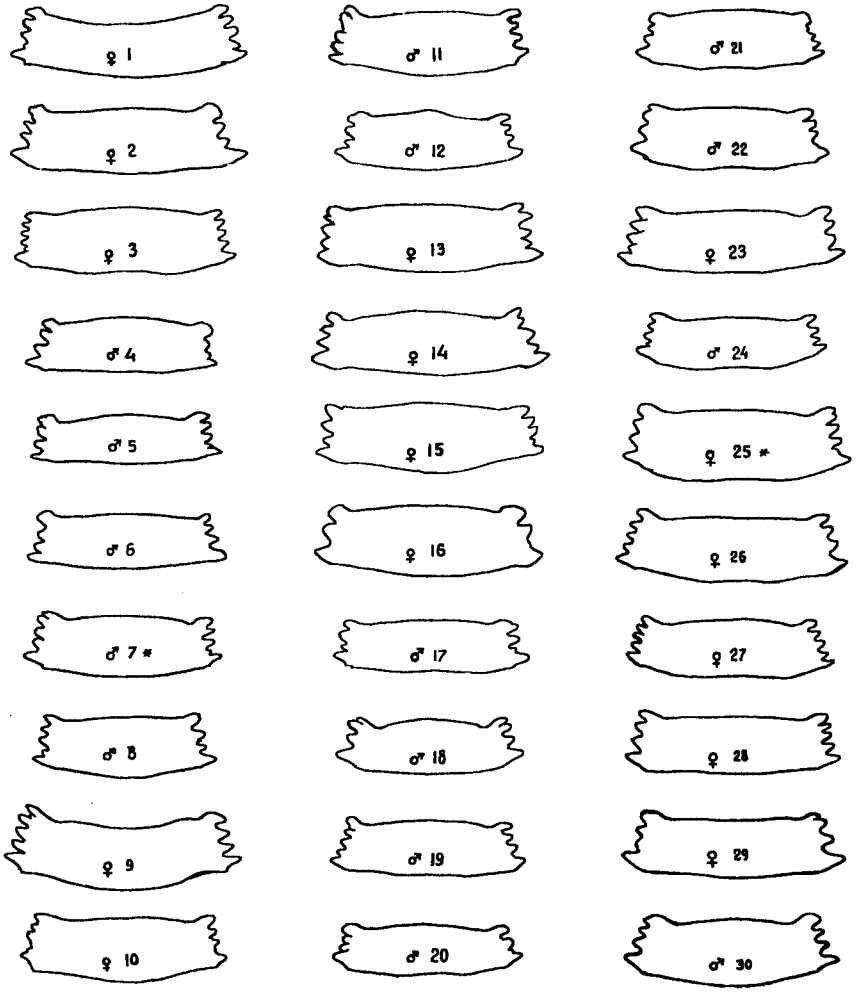

Fig. 5. *Phyllophora boschmai* nov. spec. Prozona of pronotum of all 30 type specimens, to show the variability in the lateral spines. *, specimens figured in fig. 4.

The armament of the legs cannot be given in exact numbers, therefore I give the numbers most frequently met with, and in parentheses the extreme variation.

Anterior femora:	ventro-external	2½— 3	(0 — 4)
	ventro-internal	3 — 4	(2 — 6)
Anterior tibiae:	dorsally smooth ventro-external and ventro-internal both . .	6	(4 — 7)
Second pair of legs: femora:	ventro-external	3 — 5	(2 — 6)
	ventro-internal	1½— 2	(1 — 3)
tibiae:	dorsally smooth ventro-external	6 — 7	(5 — 8½)
	ventro-internal	5 — 6	(4½— 7)
Posterior femora:	ventro-external	7	(4 — 8)
	ventro-internal	3½	(2 — 5)
Posterior tibiae:	dorso-external	11 —12	(8 —14½)
	dorso-internal	18 —20	(15 —24)
	ventro-external	6 — 7	(5 — 8)
	ventro-internal	7 — 8	(5 — 8)

In two specimens the number of small spines on the dorso-internal rib of the posterior tibiae, generally 18 to 20, is replaced by a very great number of somewhat hair-like spines like in the related species *P. picta* Karny and *P. guttata* Karny, but as yet I cannot find enough evidence to separate them on this character only.

References

Boschma, H., 1943. Voorloopig verslag over het verzamelen van dieren gedurende de expeditie van het Koninklijk Nederlandsch Aardrijkskundig Genootschap naar Nieuw-Guinee in 1939. Tijdschr. Nederl. Aardrijksk. Genootsch., vol. 60, pp. 504-522, 1 map, figs. 1, 2.

Jong, C. de, 1946. Orthopterological Notes II. The Phyllophorinae (Orthopth. Tettigoniidae) in the Rijksmuseum van Natuurlijke Historie, Leiden, and the Zoölogisch Museum, Amsterdam. Zool. Meded. Leiden, vol. 24, pp. 211-230, figs. 1-5.

——, 1947. Orthopterological Notes III. The Phyllophorinae (Orthopt., Tettigoniidae) in Mr. Willemse's Collection (Eijgelshoven, Limburg) and in the Natuurhistorisch Museum, Rotterdam. Zool. Meded. Leiden, vol. 28, pp. 243-249, figs. 1-3.

Karny, H.H., 1924. Monographie der Phyllophorinen. Treubia, Buitenzorg, vol. 5 suppl., pp. 1-142, figs. 1-40, pls. 1-4.

Kästner, A., 1933. Die Tettigoniidae des Stettiner Museums, 2. Phyllophorinae. Konowia, vol. 12, pp. 162-191, figs. 1-15, pls. 1, 2.