

Kontyû, Tokyo, 56 (3): 499–505. September 25, 1988

A Redescription of the Philippine Trechodine, *Trechodes bakeri* (Coleoptera, Trechinae)¹⁾

Shun-Ichi UÉNO

Department of Zoology, National Science Museum (Nat. Hist.),
Shinjuku, Tokyo, 160 Japan

Abstract *Trechodes bakeri* JEANNEL from southern Luzon, the Philippines, is redescribed on an adequate series of specimens. Its male genitalia are described and illustrated for the first time.

Trechodes bakeri JEANNEL (1926, pp. 488, 491, fig. 266) is a little known trechodine described on a single female collected by C. F. BAKER on Mt. Maquiling in southern Luzon of the Philippines. It has never been redescribed, though there are half a dozen additional specimens preserved in American museums. These specimens were shown to me by the late Professor P. J. DARLINGTON, JR. while I visited the Museum of Comparative Zoology more than twenty years ago. He was deeply interested in clarifying its true affinity, and asked me to examine its male genitalia. However, dissection of male specimens only revealed its isolatedness, and though a redescription of the species was prepared at that time, it has not been published until now. Since then, I have had opportunities to re-examine the type specimen of *T. bakeri* at the British Museum (Natural History), to collect by myself fresh topotypical specimens in the Philippines, and to examine for comparison almost all the described species of the genus in European and Australian museums, but the derivation of the Philippine species has not been clarified with confidence, though it seems to have a closer affinity to Australian species than to Burmese or African ones, as was already pointed out by JEANNEL (1926, p. 492).

Recently, a new trechodine was described by DEUVE (1987, p. 145, figs. 3–4) from the peninsular part of southern Thailand under the name of *T. leclerci*. The French author was certainly right in placing his species at the side of *T. bakeri* so far as concerned with the external features, but he was not aware of the aedeagal peculiarities of the Philippine species, which are strikingly different from what was described on the Thai species. Anyway, LECLERC's discovery opened up the possibility of future collectings of other related trechodines in Southeast Asia. In view of this, I have decided to publish a modified redescription of *T. bakeri* in the present paper, with the hope of facilitating future studies on Asian trechodines.

The abbreviations employed in this paper are as follows: HW – width of head

1) This study is supported by the Grants-in-aid for Overseas Scientific Research Nos. 60041078, 61043074 and 63043075 from the Ministry of Education, Science and Culture, Japan.

including eyes; PW – greatest width of pronotum; PL – length of pronotum, measured along the mid-line; PA – approximate width of pronotal apex, measured between the most advanced points on both sides; PB – width between hind angles of pronotum; BP – width of basal peduncle of pronotum; EW – greatest width of elytra; EL – greatest length of elytra; M – arithmetic mean; NSMT – Department of Zoology, National Science Museum (Nat. Hist.), Tokyo; BM – Department of Entomology, British Museum (Natural History), London; MCZ – Museum of Comparative Zoology, Harvard University, Cambridge; CAS – Department of Entomology, California Academy of Sciences, San Francisco.

Before going into further details, I wish to express my hearty thanks first of all to the late Professor P. J. DARLINGTON, JR., with whose help the original version of this paper was prepared. Deep gratitude is also due to Mr. P. M. HAMMOND of the British Museum (Natural History), London, who gave me permission to re-examine the holotype of *Trechodes bakeri* under his care, and to Dr. Tadashige HABE, under whose leadership the 1977 expedition to the Philippines was carried out.

Trechodes bakeri JEANNEL, 1926

(Figs. 1–3)

Trechodes Bakeri JEANNEL, 1926, Abeille, Paris, 32, pp. 488, 491, fig. 266; type locality: mont Makiling. — CSIKI, 1928, Coleopt. Cat., pars 98, p. 233.

Trechodes bakeri: CASALE & LANEYRIE, 1982, Mém. Biospéol., 9, p. 39.

Length: 3.30–3.50 mm (from apical margin of clypeus to apices of elytra).

Readily recognized on the salient basal lobe of prothorax and the presence of three large copulatory pieces in the aedeagal inner sac. Body relatively short and wide; fully winged as usual. Colour dark reddish brown, polished, usually with a wide dark band on the median third of elytra, which is mal-defined at the borders though extending posteriorly at the external parts; palpi, apical halves of antennae, and legs pale yellowish brown; apical sternites and external parts of epipleura yellowish brown.

Head transverse, with protruding eyes and rather narrow neck; frontal furrows deep and sharply cut throughout, subangulate at middle, and widely divergent posteriad towards neck constriction, which is deep and sharply marked at the sides; frons transversely depressed at the mid-eye level, supraorbital areas and vertex evenly convex; supraorbital pores situated on lines slightly divergent posteriad; no microsculpture; eyes large, hemispherical; genae short, more or less oblique, only one-seventh to one-sixth as long as eyes in ♂, usually somewhat longer than that and a little more oblique in ♀; in a topotypical female (MCZ), the genae are unusually long, about one-fourth as long as eyes and much more oblique than in the other specimens examined; antennae slender, reaching or almost reaching the middle of elytra in ♂, usually somewhat shorter than that in ♀, with

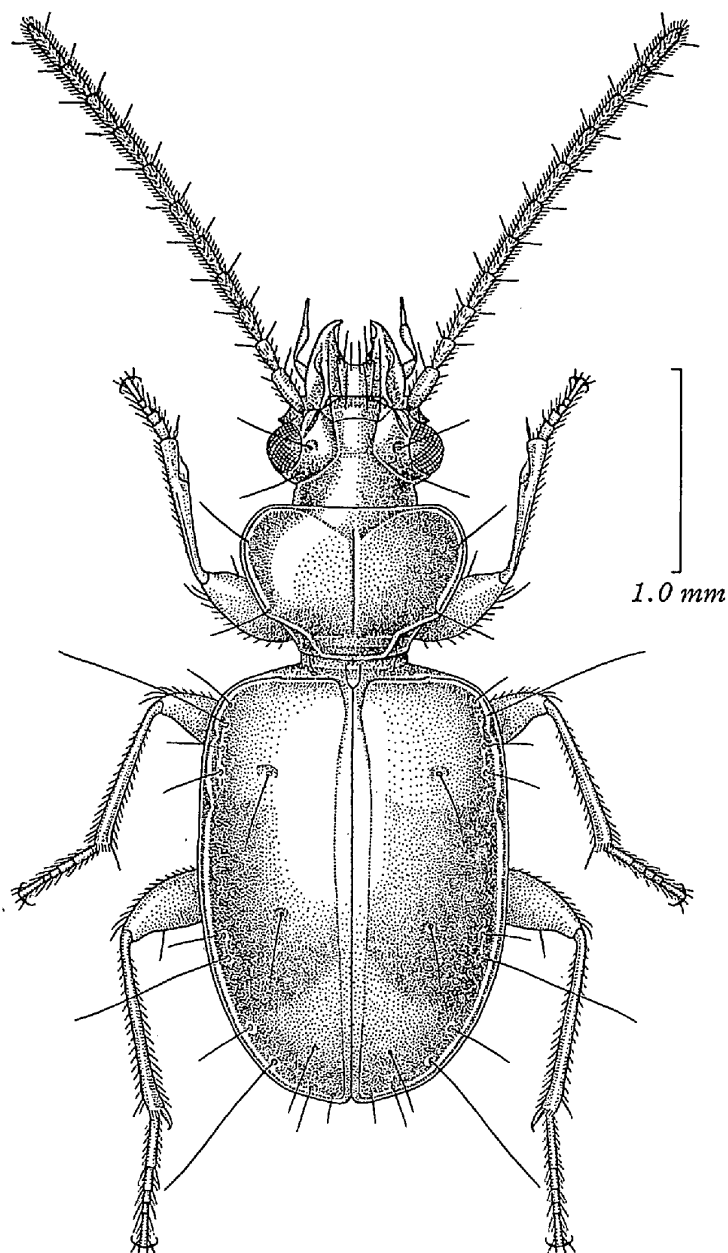


Fig. 1. *Trechodes bakeri* JEANNEL, ♂, from Mud Spring on Mt. Maquiling.

segment 2 about four-fifths as long as segment 3 or 4, segments 5–9 somewhat longer than segment 3, 4, 9 or 10, each fully 4 times as long as wide, terminal segment subequal in length to median segments or scape though much narrower than the latter.

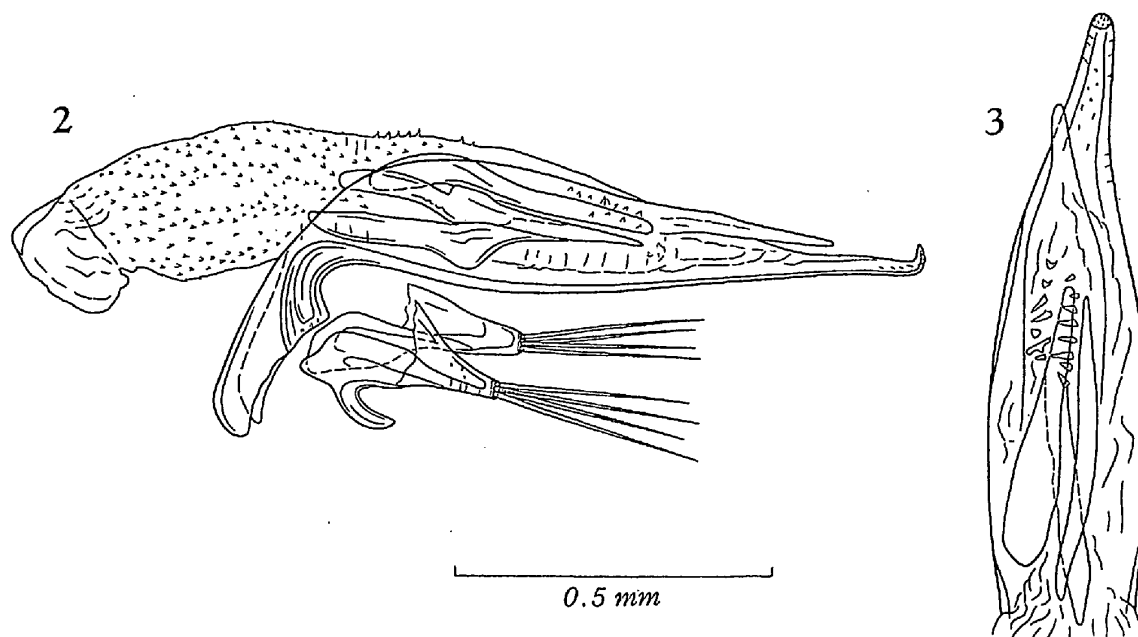
Pronotum transverse cordate, seemingly very short, widest at about three-fourths from base or a little before that level, and more gradually narrowed posteriorly than anteriorly; PW/HW 1.23–1.29 (M 1.26), PW/PL 1.47–1.57 (M 1.52), PW/PA ca. 1.43–1.52 (M ca. 1.48), PW/PB 1.26–1.34 (M 1.30), PW/BP 2.06–2.17

(M 2.12); surface convex, without microsculpture; sides very strongly rounded before the widest part and continuing into apex, very feebly arcuate or nearly straight before hind angles; marginal gutters very deep and wide, starting from inside front angles and abruptly interrupted just inside hind angles, the former rounded off and the latter very obtuse; apex either straight or slightly emarginate, PB/PA ca. 1.09–1.17 (M ca. 1.14); basal part behind the level of hind angles remarkably produced, occupying about one-third the length of pronotum, obliquely emarginate on each side, and narrowly subtruncated at the posterior margin, whose lateral portions roundly continue anteriorly; dorso-lateral parts of basal peduncle clearly visible from above outside the basal lobe of pronotum; PA/BP ca. 1.36–1.50 (M ca. 1.43); median line distinct though not very deep, usually not reaching base; apical impression sharply marked, forming a wide V though more or less interrupted at middle; basal transverse impression deep, continuous and slightly arcuate, without basal fovea on each side; basal area narrow and smooth.

Elytra relatively short and wide, subovate, widest slightly behind the middle and nearly parallel-sided before that level; EW/PW 1.35–1.42 (M 1.39), EL/EW 1.41–1.46 (M 1.43); surface convex, though more or less depressed longitudinally on the disc in basal three-fifths; microsculpture totally effaced in ♂, partially present and consisting of fine transverse lines in ♀; shoulders square, with prehumeral borders almost perpendicular to the mid-line though slightly sinuate in most individuals; sides rather widely reflexed before middle, almost straight in front, feebly arcuate behind, and devoid of posthumeral teeth or crenulation; apices widely and almost conjointly rounded, each usually subangulate and rarely forming a minute tooth; stria 1 deeply impressed throughout and minutely punctate, vestige of stria 2 rarely perceptible on the disc, fragments of stria 8 present in apical half; apical striae degenerated, vestigial even if perceptible; interval 1 widened and slightly convex at about basal fourth; two foveolate setiferous dorsal pores present at about one-fifth and five-ninths from base respectively; preapical pore situated on apical declivity and much more distant from apex than from suture.

Ventral surface pubescent excepting lateral parts of thoraces and proximal sternites, the pubescence being particularly dense on sternites; anal sternite more strongly arcuate at the apical margin in ♂ than in ♀, bearing a pair of setae in the former and two pairs in the latter. Legs fairly slender; protibiae externally grooved; in ♂, terminal spurs, especially the internal one, of each metatibia remarkably compressed, somewhat falcate, and slightly serrulate on the posterior margin, with the apical part distinctly unguiform in the internal one; in ♀, two proximal segments of each protarsus moderately dilated and inwardly denticulate at apices.

Male genital organ large, elongate, and rather heavily sclerotized. Aedeagus about five-ninths as long as elytra, moderately depressed, lightly reflexed, widest and highest before the middle, and gradually tapered towards apex, with an elongate ligule above apical orifice, the apical part of which is narrowly prolonged and inclined to the right; basal lobes narrow, elongate, and abruptly bent ventrad;



Figs. 2-3. Male genitalia of *Trechodes bakeri* JEANNEL, from Mud Spring on Mt. Maquiling; left lateral view (2), and dorsal view of aedeagus without basal lobes (3).

apical lobe long and narrow, almost straight in lateral view, with the apex rectangularly curved dorsad and narrowly truncated at the tip; ventral margin widely arcuate before middle in profile. Inner sac largely covered with minute, poorly sclerotized teeth, especially in proximal half, being armed with three elongate sclerites three-eighths to four-ninths the length of aedeagus; right dorsal and left lateral sclerites lying obliquely, with the proximal parts inclined to the right, the former slightly shorter than the latter, fairly broad and dorsally arcuate in proximal half; left lateral sclerite dorso-ventrally tuberculate before middle and subulate towards the apex; ventral sclerite adaxial, lying along the mid-line of aedeagus, so that it extends from below the proximal part of the left lateral sclerite to beneath the apical part of the right dorsal one, with a large rounded ventral protuberance at about middle. Styles small, left style smaller than the right and with a long arcuate ventral projection, each bearing four long setae at the apex.

Type depository. Department of Entomology, British Museum (Natural History), London.

Specimens examined. 1 ♀ (holotype), Mt. Makiling (=Mt. Maquiling), Luzon, Philippines, C. F. BAKER leg. (BM); 1 ♂, 1 ♀, same data as for the holotype (MCZ); 2 ♀♀, Mt. Maquiling, Mud Spring (source of Molawin Creek), 370 m alt., Laguna Prov., Luzon, Philippines, 18-VI-1977, S. UENO leg. (NSMT); 2 ♂♂, 2 ♀♀, same locality, 30-VI-1977, S. UENO leg. (NSMT); 2 ♂♂, 2 ♀♀, Subig Bay (=Subic Bay), Luzon, Philippines, -V-1907, J. C. THOMPSON leg. (CAS, MCZ, NSMT).

Range. Southern part of Luzon, the Philippines.

Notes. Of the *Trechodes* species hitherto known, *T. leclerci* DEUVE from southern Thailand may be closest to *T. bakeri*, even though its male genitalia are widely different in conformation from those of the latter. The external similarity between the two seems even closer than was considered by the French author. Three features were taken up by him for discriminating *T. leclerci* from *T. bakeri*, but only the longer basal lobe of pronotum can be regarded as being characteristic of the former; the size of eyes and the width of pronotum are not important, as can be seen from the redescription of *T. bakeri* given above. On the other hand, the Philippine species is unique in the peculiar development of copulatory pieces, which suggests that it has long been isolated from its congeners.

It is almost doubtless that the ancestor of *T. bakeri* originated somewhere in the continental part of Southeast Asia and reached the Philippines across the South China Sea. Being a good flier, it could be easily carried by strong wind, so that the invasion could be realized anytime in the past. This contradicts the isolated condition of its male genitalia, even though its external morphology is very similar to that of a continental species. Further investigations in Indochina and South China are needed for solving the problem whether the genitalic peculiarity is really limited to the Philippine species or common to some continental ones not yet brought to light.

Mt. Maquiling, the type locality of *T. bakeri*, is an isolated volcano 1,090 m high, lying between Laguna de Bay and Taal Lake in southern Luzon. On the northeastern slope of the mountain at an altitude of 370 m, there is a small spring called Mud Spring, which lies at the side of the source of the Molawin Creek. At this point, the stream is narrow, rather stagnant, and only thinly shaded by shrubs, though it becomes much more rapid only 50 m or so downstream and runs down through a dim forest. All my specimens of the trechodine were collected along the edge of the slowly flowing water within a distance of about 10 m. They were found from beneath large stones half embedded in the ground and half submerged in the water. In spite of dwelling in such a habitat, they were very active and readily took wing when exposed.

Trechodes bakeri is also known from Subic Bay, which is situated at the western side of the base of the Bataan Peninsula about 125 km apart to the northwest across Manila Bay from Mt. Maquiling. It is therefore probable that the trechodine is actually widespread in southern Luzon, even though its occurrence is sporadic.

References

- CASALE, A., & R. LANEYRIE, 1982. Trechodinae et Trechinae du monde. Tableau des sous-familles, tribus, séries phylétiques, genres, et catalogue général des espèces. *Mém. Biospéol.*, 9: i+1-226.
- CSIKI, E., 1928. Carabidae: Mormolycinae, Harpalinae II. In JUNK, W., & S. SCHENKLING (eds.), *Coleopterorum Catalogus*, pars 98 (pp. 227-345). W. Junk, Berlin.

- DARLINGTON, P. J., JR., 1959. The *Bembidion* and *Trechus* (Col.: Carabidae) of the Malay Archipelago. *Pacif. Ins.*, 1: 331-345.
- DEUVE, T., 1987. Descriptions de deux Carabiques nouveaux de Nouvelle-Calédonie et de Thaïlande [Coleoptera, Caraboidea, Psydridae, Trechidae]. *Rev. fr. Ent.*, (N. S.), 9: 143-146.
- JEANNEL, R., 1926. Monographie des Trechinae. Morphologie comparée et distribution géographique d'un groupe de Coléoptères. (Première livraison). *Abeille, Paris*, 32: 221-550.

第2回マメゾウムシと豆類国際シンポジウム開催について (2nd International Symposium on Bruchids and Legumes, ISBL-II)

豆類は世界の貴重な蛋白源であり、わが国でも大豆、アズキ、リョクトウなどの豆類が、煮豆としてそのまま食べられるほか、味噌、豆腐、もやし、菓子などの原料として用いられる。豆類のうちでもおもに雑豆類を加害するマメゾウムシ類の被害は大きく、とくに発展途上国では20~60パーセントが加害によって失われている。マメゾウムシは害虫としての重要性のほか、飼育が容易であるため生物学の実験研究材料として用いられ、貴重な研究成果をあげてきた。このたび世界のマメゾウムシと豆類の研究者が集まり討論するために、下記のような国際シンポジウムを開催することとなった。多くの会員の方がたにご参加いただけるようお願い申し上げる。

会期 1989年9月6日(水)~9日(土)、ただし最終日はエキスカージョンを予定

場所 岡山市、カルチャーホテル

主催 シンポジウム組織委員会、日本応用動物昆虫学会、国際科学振興財団

後援団体 (予定を含む) 日本学術会議、日本昆虫学会、日本農薬学会、日本育種学会、日本生態学会、個体群生態学会、日本食品衛生学会、岡山大学、財団法人防虫科学研究所

会議の内容

1. マメゾウムシの防除技術、野外、貯蔵場所での防除、くん蒸技術、情報化学物質、各国での被害と防除の現状。
2. 豆類の生物学、分類、系統進化、地理的分布、育種。
3. マメゾウムシの生物学、分類学、地理的分布、野外生態、実験個体群、寄主-寄生蜂系モデルエコシステム。
4. マメ-マメゾウムシ相互作用、マメの分布とマメゾウムシの加害、マメとマメゾウムシの生活史、生理、生化学的相互作用、共進化。

参加費 登録 20,000 円、パーティー参加費 7,000 円

下記へご連絡いただければファーストサーキュラーをお送りする。

連絡先 〒700 岡山市津島中 1-1-1

岡山大学農学部応用昆虫学研究室

シンポジウム組織委員会事務局

(吉田敏治、中筋房夫)

(Tel. 0862-52-1111 内線 718)

(Fax. 0862-54-0714)