

Discovery of a New Long-armed Scarabaeid Beetle (Coleoptera) on the Island of Okinawa

By

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Abstract

A new species of long-armed scarabaeid beetle belonging to the genus *Cheirotonus* is described from Okinawa, the largest island of the Ryukyus. It is related to the *parryi* group distributed to Southeast Asia and China.

It was in the mid-fifties that I first heard of a rumor that a large long-armed beetle might occur in the central part of the Island of Okinawa. It came from Mr. Kazuhiko MORISHITA, a lepidopterist, who spent his youth in Okinawa and saw a specimen of *Cheirotonus* in a collection of insects made by a schoolchild. It was, however, utterly incredible at that time, and since a *Cheirotonus* (*C. macleayi formosanus* OHAUS, 1913) was well known in Formosa adjacent to the Ryukyus, the specimen seen by MORISHITA was supposed to have come from Formosa through a dealer.

A second report on an Okinawan long-armed beetle was brought by Dr. Shun-Ichi UENO in 1961, when he visited Okinawa on the way to Formosa. He met Professor Kiyoshi YAMAZATO of the University of the Ryukyus and was told that a dark-coloured specimen of a *Cheirotonus* had been displayed at an exhibition by students. A third report was also received by Dr. UENO in 1963 when he visited the Forestry Experiment Station of the University of the Ryukyus at Yona in the northern part of Okinawa. There he was told by the caretaker that "a large black beetle of the size of a soap-box" had once come flying to light in front of the station. Since that time, however, no more news about the beetle has been heard by anyone for nearly twenty years, and the occurrence of *Cheirotonus* on Okinawa has remained unascertained.

A new light on this problematical beetle was thrown on a sounder basis in 1982. On April 2 of that year, Mr. Yoshihito ITO found a hind body of a female *Cheirotonus* half buried in the soil along the Oku Forestry Road near the northern end of Okinawa, and submitted it to me for examination through Mr. Nobuo OHBAYASHI. Contrary to the reports received by Dr. UENO, it had yellowish pattern on the elytra and could not be confidently distinguished from the female hind body of *C. macleayi formosanus* except for the difference in the shape of pygidium. It was, however, a definite proof that a *Cheirotonus* did exist on the Island of Okinawa.

The news of Mr. ITO's discovery has rapidly spread among young collectors, and though none of them succeeded in obtaining the beetle, a large male in a perfect

condition was at last caught flying to light at the dam of the Fukugawa Reservoir at the northern part of Okinawa on September 15, 1983, and was sent to me for examination through the courtesy of Professor Seiji AZUMA of the University of the Ryukyus. Following to this, in December of the same year, a male and three females reared from the larvae found in the rotten trunk of the *Castanopsis* oak also came to my hand through the courtesy of Mr. Hiroshi FUJITA. Finally on February 9, 1984, five males and two females of this beetle were collected by Mr. Tetsuo MIZUNUMA from a hole on a living oak (*Cyclobalanopsis miyagii* KUDO et MASAMUNE) in the forest along the Ié Forestry Road at the northern part of the same island, and were submitted to me for examination. Thus, the long-armed scarabaeid beetle at last unmasked its true identity.

At a glance, the male beetles differed from the Formosan form in their dark coloration with only a few yellowish spots on the elytra. A closer comparative study has revealed that the Okinawan form decisively differs from the Formosan in the conformation of the pronotal median groove and in the mode of hairs on the pygidium. It does not belong even to the *macleani* group, which includes the Formosan form, but to the *parryi* group widely distributed in Southeast Asia. Within the species-group, it resembles *jansoni* in the dark coloration and in the short stout male fore legs, but differs from it in the details to be given in the description. It is a new species beyond all reasonable doubt and will be described in the present paper under the name of *Cheirotonus jambar*.

Before going further, I wish to express my hearty thanks to Professor Seiji AZUMA, Mr. Hiroshi FUJITA, Mr. Toshiyuki ICHIKAWA, Mr. Yoshihito ITO, Mr. Tetsuo MIZUNUMA, Mr. Shinji NAGAI, Mr. Nobuo OHBAYASHI and Mr. Akihiko YAMATO for their kind loan of valuable material, to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, for his kind aid in various ways in the course of this study, and also to Dr. Mamoru OWADA and Miss Yoshimi WATANABE of the same museum for their kind aid in making the figures.

Cheirotonus jambar sp. nov.

(Figs. 1-3)

Male. Body large and heavy. Head and pronotum dull bronzy green; elytra pitchy black, with a distinct greenish or bronzy tinge, leaving a few dull brownish or yellowish irregular-sized patches in the basal depression, along the suture and the margin, and at the apex; legs and the body beneath blackish, with a slight iridescent shimmer; antennae black with the lamellae margined with brown.

Head small, excavated anteriorly with a λ -shaped elevation at the middle of vertex, and the anterior margin entirely reflexed, angulately emarginate in dorsal aspect, broadly and rather arcuately produced downwards in frontal aspect; anterior margin of clypeus subtruncate or arcuately produced with a small but sharp dentation on each side; gula broad and arcuate; surface strongly but rather sparsely punctate, but the punc-

tures are rounded, irregular in size, and not confluent with each other.

Pronotum transverse, about 1.8 times as broad as long, widest just behind the middle; sides obliquely expanded from posterior angles to the widest part, where they are broadly rounded and produced, and then strongly but somewhat arcuately attenuate to anterior angles, which are acute and sharply produced; anterior margin narrow, slightly bisinuate, with a small obsolete but acute projection at the middle; posterior angles obtuse, not produced; posterior margin bisinuate, with the median lobe broadly and arcuately produced; lateral margin reflexed and irregularly denticulate, but the denticulation becomes obsolete and rather crenulate in anterior half; disc broadly and strongly convex, with a broad, deep and oblique depression just before each posterior angle along posterior half of the margin, the convexity being bipartite by the median longitudinal groove, which is broader and deeper dorsally, shallower and obsolete anteriorly, closed posteriorly, and not reaching posterior margin; surface scattered with round punctures, but the punctuation becomes denser and somewhat confluent in the lateral depressions and the median groove, sparser and weaker on the convexities on each side of the median groove. Scutellum lingulate, scattered with a few minute punctures on each side of the median line, which is slightly and obsoletely impressed.

Elytra about 1.23 times as long as wide, about 2.15 times as long as pronotum, and widest at or just behind the middle; sides arcuately expanded at humeri, somewhat arcuately rounded from humeri to apices, or almost subparallel to outer angles of apices, which are broad, with the outer angles broadly and arcuately rounded and the sutural angles subrectangular, very feebly produced; sutural margin broadly but obsoletely elevated in anterior two-thirds; lateral margins narrowly reflexed; disc convex, with basal depressions moderate, not deep and large, and with a faint trace of costa; surface glabrous, sparsely scattered with inconspicuous fine punctures and somewhat transversely and sparsely rugose in posterior two-thirds.

Body beneath entirely clothed with suberect brownish-grey hairs, except for those on the exterior side of prosternal episterna which are bright brownish, very long and dense, brush-like, and protrude from the sides of pronotum and visible from above; pygidium broad, rectangularly abased, about twice as broad as long, invisible dorsally or slightly exposed from elytra, and clothed with rather short, inconspicuous, semirecumbent hairs.

Anterior legs long, though shorter and robuster than in the other species of the genus; femora robust, with the interior dentation large, though not so large and strong as in the other species, and the apical upper projection not so strongly produced as in the other species; tibiae shorter and robuster than in the other species, slightly longer than femora, uni-arcuate, with denticulation of the inner margin finer and rather regular, and those of the outer margin reduced and obsolete, the terminal process not so long, as long as or slightly shorter than the length of the basal three tarsal segments united, with a small obsolete hook at the apex, second process distinctly shorter than the basal two tarsal segments united, but sharp and slender; middle and posterior pairs of legs as in the other species of the genus.

Length: 51.2–61.5 mm; width: 22.3–33.8 mm.

Length of anterior legs: femur, 15.0–23.0 mm; tibia, 20.8–30.8 mm; tarsus (including claws), 19.0–26.0 mm.

Variations: In the smallest example, the pronotum becomes smaller and narrower, with the posterior angles more produced and acute, subrectangular, the terminal process of anterior tibia becomes very short, about as long as the basal segment of tarsus, and the second process also becomes very short, forming a small sharp spine, but, on the contrary, the outer dentations of anterior tibia are more distinct than in the larger specimens.

Male genital apparatus: Very large and robust, with each paramere depressed or sulcate and broadly dilated and strongly swollen laterally at the apex.

Female. Different from the male in the following points: 1) Anterior pair of legs short and normal, with tarsi slightly but distinctly longer than tibiae; 2) anterior margin of clypeus subtruncate with a small incision at the middle; 3) pronotum narrower, about 1.7 times as broad as long, with the punctuation stronger, denser and coarser; 4) pubescence of the body beneath weaker; 5) pygidium exposed from elytra, narrower, about twice as wide as long, with the apex more sharply produced, sides more or less sinuate near the apex, and the hairs brownish.

Variations of the female: Considerable variation occurs in the brownish patches on elytra, from black individuals like the male to beautifully patterned one like the blackish male of *C. parryi* GREY, 1848.

Length of the female: 48.2–60 mm (with pygidium); width: 25.0–29.0 mm.

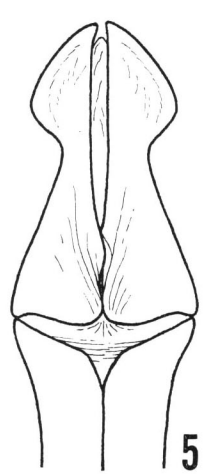
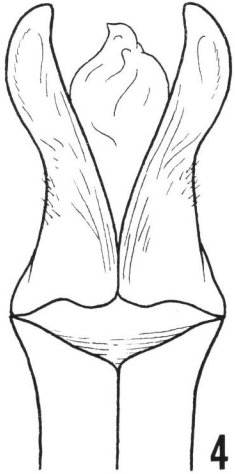
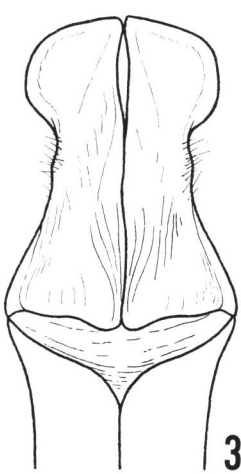
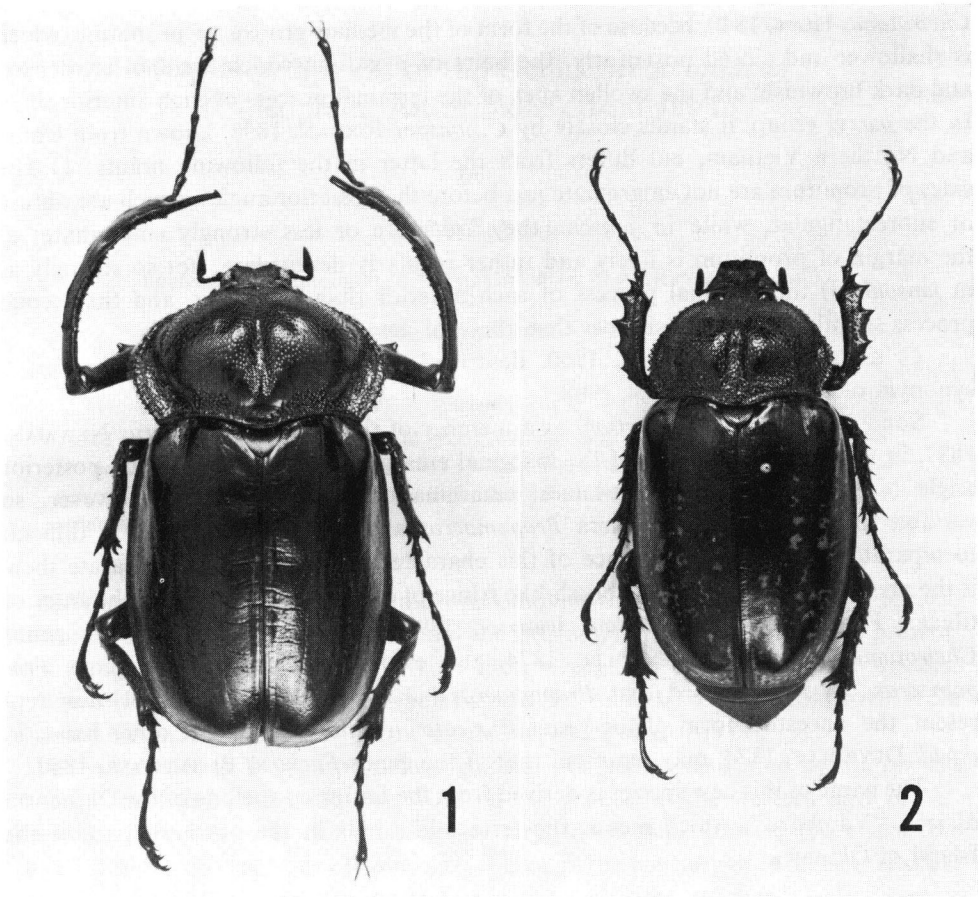
Holotype: Maximum male, Ié Forestry Road, Kunigami, N. Okinawa Island, 9. ii. 1984, T. MIZUNUMA lgt. Allotype: Maximum female, the same data as the holotype. Paratypes: Four males and a female, the same data as the holotype; a maximum male, Fukugawa, Kunigami, N. Okinawa Island, 15. ix. 1983, S. NAKASONE lgt.; a minimum male, a maximum female and two defective females collected by A. YAMATO in larval stage from a decayed timber of *Castanopsis lutchuensis* KOIDZUMI in the summer, 1983, in the forest along Oku Forestry Road of the northern part of Okinawa Island, and reared in Tokyo, 11. xii. 1983.

The holotype, allotype, and a minimum male and three females of the paratypes collected by A. YAMATO are preserved in the collection of the National Science Museum, Tokyo. A maximum male paratype collected at Fukugawa is preserved in the collection of the Faculty of Agriculture, the University of the Ryukyus. A male paratype collected by T. MIZUNUMA is preserved in the collection of the Entomological Laboratory, Faculty of Agriculture, Ehime University, and three males and a female of the paratypes are returned to Mr. T. MIZUNUMA's own collection.

Remarks. The present species evidently belongs to the *parryi* group of the genus

Figs. 1–2. *Cheirotonus jambar* Y. KUROSAWA, sp. nov., male (1) and female (2).

Figs. 3–5. Male genital apparatus of *Cheirotonus jambar* Y. KUROSAWA, sp. nov. (3), *C. arnaudi* MINET, 1981 from the Cameron Highlands, Malaya (4), and *C. macleayi formosanus* OHAUS, 1931, from the environs of Puli, Central Formosa (5).



Cheirotonus HOPE, 1840, because of the form of the median groove of pronotum which is shallower and closed posteriorly, the hairs of pygidium which are shorter, denser, and dark brownish, and the swollen apex of the terminal process of each anterior tibia. In the *parryi* group, it stands closely by *C. jansoni* JORDAN, 1898, known from China and Northern Vietnam, but differs from the latter in the following points: 1) The sides of pronotum are not emarginate just before the posterior angles, which are obtuse or subrectangular, while in *jansoni*, they are more or less strongly emarginate; 2) the margin of pronotum is finely and rather regularly denticulate, not so strongly as in *jansoni*; 3) the terminal process of each anterior tibia is shorter, and the second process slightly longer and sharper than those of *jansoni*.

C. szetshuanus MEDVEDEV, 1960, described from Szechwan, China, may be a synonym of *C. jansoni* JORDAN, 1898.

Some authors regarded *jansoni* as a member of the genus *Propomacrus* NEWMAN, 1837, in view of the existence of the marginal emargination just before each posterior angle of pronotum. The post-lateral emargination of pronotum is, however, so variable individually in the genera *Propomacrus* and *Cheirotonus*, that it is difficult to separate them by the difference of this character. A sole point to separate them is the presence or absence of the brush-like fringe of dark brownish hairs on the anterior tibiae. From this point, *jansoni* JORDAN, 1898, evidently belongs to the genus *Cheirotonus*, and *davidi* DEYROLLE, 1874, also evidently belongs to the genus *Propomacrus*. It is surmised that *Propomacrus bimucronatus* (PALLAS, 1781) may represent the ancestral form of the genus *Cheirotonus*, and that, on the other hand, *P. davidi* DEYROLLE, 1874, may represent that of the genus *Euchirus* BURMEISTER, 1840.

The name of this new species is derived from the Latinized spelling of the Okinawan dialect, "Yambaru", which means the terrace-like hills in the northern part of the Island of Okinawa.

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