

A Second Representative of *Pseudocoptolabrus* (Coleoptera, Carabidae) Discovered in Southern Sichuan, China

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Abstract A new species of the genus *Carabus* (s. lat.) belonging to the subgenus *Pseudocoptolabrus* is described from the Daliang Shan Mountains of southern Sichuan, Southwest China, under the name of *C. (P.) armiger* nov.

Pseudocoptolabrus is a unique component of the genus *Carabus* (s. lat.), which is regarded as one of the subgenera belonging to the subdivision Procrustimorphi of the division Multistriati (cf. IMURA, 1996, pp. 5–12). It was originally established by REITER (1896, p. 95) for a single Chinese species, as one of the thirteen subgenera belonging to the division “Carabi Multisetosi” of the grand genus *Carabus*. Though once synonymized by BREUNING (1932–’37) with the “Sectio” *Megodontus* of the subgenus *Procrustes*, and often treated as a member of the “subgenus” *Megodontus*, it is now widely accepted as a distinct subgenus.

The type species, *Carabus taliensis*, was described by FAIRMAIRE (1886, p. 223) as a member of the genus *Coptolabrus* from “Yunnan”, without further detailed data, and there was a long blank in our knowledge until IMURA and KEZUKA (1989, pp. 3–7) recorded the same species from “near Tali (=Dali)” in western Yunnan under the name “*Protodamaster aesculapius*”, which is now regarded as a mere local race of FAIRMAIRE’s species. With the recent advancement of general knowledge about the Chinese carabid fauna, ten more subspecies have subsequently been described, namely, *atentsensis* DEUVE (1990 a, p. 26) from “Atentse (=Dêqên)” at the northwestern tip of Yunnan, *yulongxueensis* DEUVE (1990 b, p. 2) from Mt. Yulongxue Shan (4,100 m) in Northwest Yunnan, *lijiangensis* DEUVE (1990 b, p. 2) from the Ganhaizi Pass (3,000–3,500 m) of the same mountain range, *kezukai* DEUVE et IMURA (1991, p. 148) from Mt. Baimaxue Shan (4,300 m) near the northwestern tip of Yunnan, *weibaoensis* DEUVE (1992, p. 58) from “Weibao, 3,000 m” (without indication of the exact locality) of Yunnan, *xueshanicola* DEUVE (1992 b, p. 59) from Habaxue Shan (4,600 m) in Northwest Yunnan, *wengshuiensis* DEUVE (1994, p. 468) from the “route entre Xiangcheng et Wengshui, col à 35 km au sud de Xiangcheng et 15 km au nord de Wengshui, 3,500 m” near the borders between Northwest Yunnan and Southwest Sichuan, *mulianus* DEUVE (1995, p. 31) from “30 km au nord-ouest de Muli, en forêt, env. 3,500 m”

near the southwestern end of Sichuan, *stupaensis* CAVAZZUTI (1996, p. 232) from the "Passo fra Yanyuan e Muli, 3,300 m" near the southwestern end of Sichuan, *cangshanensis* DEUVE (1996, p. 87) from the "Cang Mts., 4,000 m" in Northwest Yunnan, and *yanmenensis* DEUVE (1996, p. 87) from "Hengduan mts-part MEILI, 3,700 m" in Northwest Yunnan. Though considerably variable both in external and genitalic features, all these taxa can be unified from morphological viewpoint into a single polytypical species, and no other representative of the same subgenus differentiated to the species level has been known within the Chinese territory up to the present.

Late in the summer of 1996, I received from Mr. Wakô KITAWAKI a short series of insect specimens consisting mainly of the genera *Carabus* and *Cychrus* collected from the high altitudinal area of the Daliang Shan Mountains situated between the Rivers Jinsha Jiang and Dadu He in the southern part of Sichuan. The collection contained a strange species obviously belonging to the subgenus *Pseudocoptolabrus*. At the first glance, it seemed to represent a local race of *C. (P.) taliensis*, but after a careful comparative study of all the known subspecies of the latter, I have realised that the Daliang Shan species definitely differs from FAIRMAIRE's one mainly in the shape of the pronotum, the condition of the elytral sculpture and the shape of the male foretarsus, as well as in the conformation of the male genital organ. It will be described as a new species in the following lines.

Before going into further details, I wish to express my deep indebtedness to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, for revising the manuscript of this paper. Hearty thanks are also due to Messrs. Wakô KITAWAKI and Kiyoyuki MIZUSAWA for their kind consideration in giving me an opportunity to examine such an interesting species.

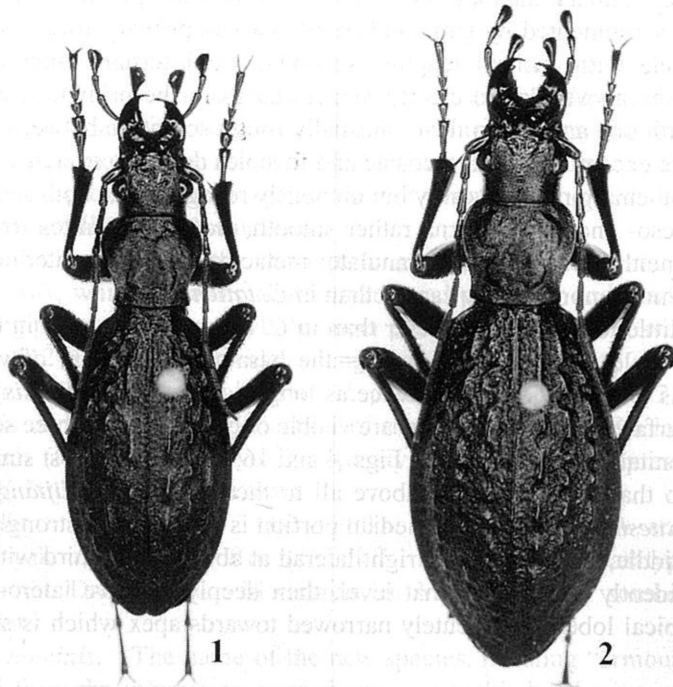
***Carabus (Pseudocoptolabrus) armiger* IMURA, sp. nov.**

(Figs. 1, 2, 4, 16)

Length: 28.6–33.8 mm (including mandibles). Entirely black and mat.

Medium-sized species with the external features similar to those of *C. (P.) taliensis* FAIRMAIRE, but definitely different from that species in much more rugged dorsal surface of body, characteristically shaped pronotum and much more strongly prominent primary intervals of elytra, as well as differently shaped male genital organ.

Head as in *C. taliensis*, but the apical margin of labrum more deeply emarginate, frontal furrows more deeply guttered and the dorsal surface more roughly and conspicuously rugulose; two teeth of right mandibular retinaculum variable in lengths according to individuals — they are almost of the same length in two of the four type specimens, but the anterior tooth is longer than the posterior in one specimen, and the anterior is shorter than the posterior in the remaining one; antennae a little longer than in *C. taliensis*, barely reaching the middle of elytra in male and extending beyond the basal third in female; terminal segments of palpi in male a little more widely divergent than those of *C. taliensis*; penultimate segments of labial palpus multisetose, with four



Figs. 1–2. *Carabus (Pseudocoptolabrus) armiger* IMURA, sp. nov., from Dafengding of the Daliang Shan Mountains in southern Sichuan; 1, ♂ (holotype); 2, ♀ (allotype).

to eight setae on each side; median tooth of mentum wider at the basal part, less sharply pointed or sometimes even slightly bifid at the tip, and much less remarkably protrudent ventrad than in *C. taliensis*.

Pronotum considerably different in shape from that of *C. taliensis*, which is more strongly cordate, widest at about apical fourth, and much more strongly narrowed towards base than towards apex; PW/HW 1.22–1.27 (M 1.25), PW/PL 1.10–1.14 (M 1.12), PW/PAW 1.43–1.58 (M 1.51), PW/PBW 1.29–1.37 (M 1.33), PBW/PAW 1.05–1.18 (M 1.14); front angles obtuse and hardly produced anteriorly; sides rather strongly arcuate in front, distinctly sinuate at basal fifth or a little behind that level, and then obviously divergent towards hind angles which are obtuse, only slightly produced posteriorly and obliquely bent ventrad; disc flatter as a whole than in *C. taliensis*, but the surface is much more rugged and more roughly rugoso-scabrous, with a butterfly-shaped convexity widely occupying the central portion; basal foveae not deeply carved with the margins not clearly outlined; median longitudinal line very weakly and shallowly impressed, and partly becoming unclear; marginal setae completely absent.

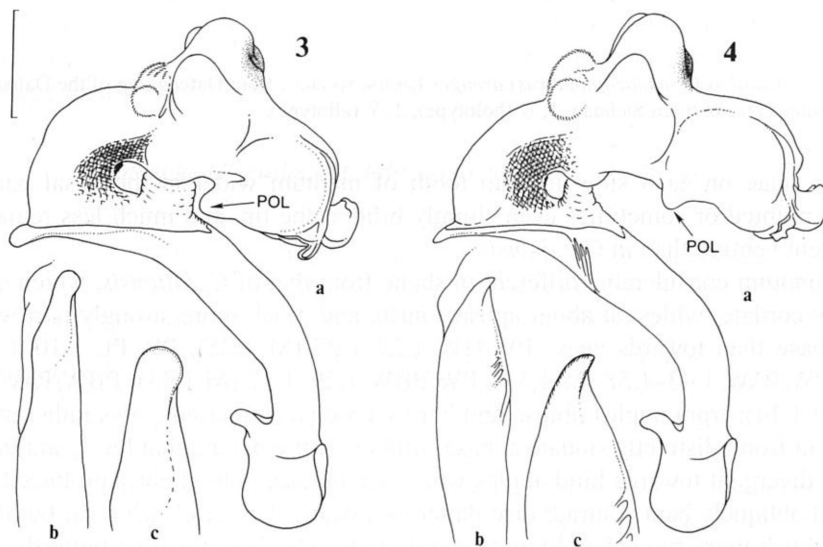
Elytra a little robuster than in *C. taliensis*, with much more roughly sculptured

discal surface. Primary intervals much more strongly prominent than in *C. taliensis* and irregularly segmented by large and deeply carved primary foveoles to form rows of wide costae with various lengths; secondary and tertiary intervals much less strongly convex above, not so clearly recognised as in the primaries, and irregularly connected with one another to form unusually rough sculpture between the primaries; elytral surface except for primary costae and foveoles densely covered with large granules; preapical emargination weakly but obviously recognised in both sexes.

Pro-, meso- and metepisterna rather smooth, sides of sternites irregularly rugulose though neither punctate nor granulate; metacoxa bisetose, anterior setae absent; sternal sulci much more weakly carved than in *C. taliensis*.

Legs a little longer and slenderer than in *C. taliensis*, above all in the basal three segments of male foretarsus, the first (=the basalmost) segment of which is about three times as long as wide (about twice as long as wide in *C. taliensis*); hair pads on the ventral surface of male foretarsus are visible only in the basal three segments.

Male genital organ as shown in Figs. 4 and 16; aedeagus almost similar in general proportion to that of *C. taliensis*, above all to those of subspp. *lijiangensis*, *yulong-xuensis* and *xueshanicola*, but the median portion is a little more strongly inflated ventrad at the middle, evidently tumid right laterad at about apical third with the right lateral wall evidently rugulose at that level, then deeply concave latero-ventrad at the right side; apical lobe rather acutely narrowed towards apex which is sharply pointed



Figs. 3-4. Male genital organ of *Carabus* (*Pseudocoptolabrus*) spp. — 3, *Carabus* (*Pseudocoptolabrus*) *taliensis lijiangensis* DEUVE (paratype), from Ganhaizi of Lijiang district in northwestern Yunnan; 4, *C. (P.) armiger* IMURA, sp. nov. (holotype), from Dafengding of the Daliang Shan Mountains in southern Sichuan; a, aedeagus with fully everted endophallus in right lateral view; b-c, apical part of aedeagus in ventral view; POL, podian lobe. Scale: 2 mm for a and b, 1 mm for c.

both in lateral and ventral views, and rather strongly bent right laterad; viewed ventrally, apical third of aedeagus not conspicuously emarginate left laterad as in *C. taliensis* but roundly arcuate throughout, as shown in Fig. 4b; ostium lobe narrower and smaller than in *C. taliensis*; endophallus a little longer and slenderer especially in the apical half; prepraeputial lobes larger, and a pair of subtriangularly shaped membranous inflation situated on the ventral side at about apical third to fourth (I call it "podian lobe", a term newly proposed here) smaller and not directed to the base of endophallus as in *C. taliensis* in fully everted condition.

Female genital organ with the outer plate of ligular apophysis much slenderer than in *C. taliensis*, which is rather acutely narrowed posteriad and markedly sclerotized with strong pigmentation as a whole; inner plate a little more transverse than that of *C. taliensis*, 1.12–1.23 times as wide as long.

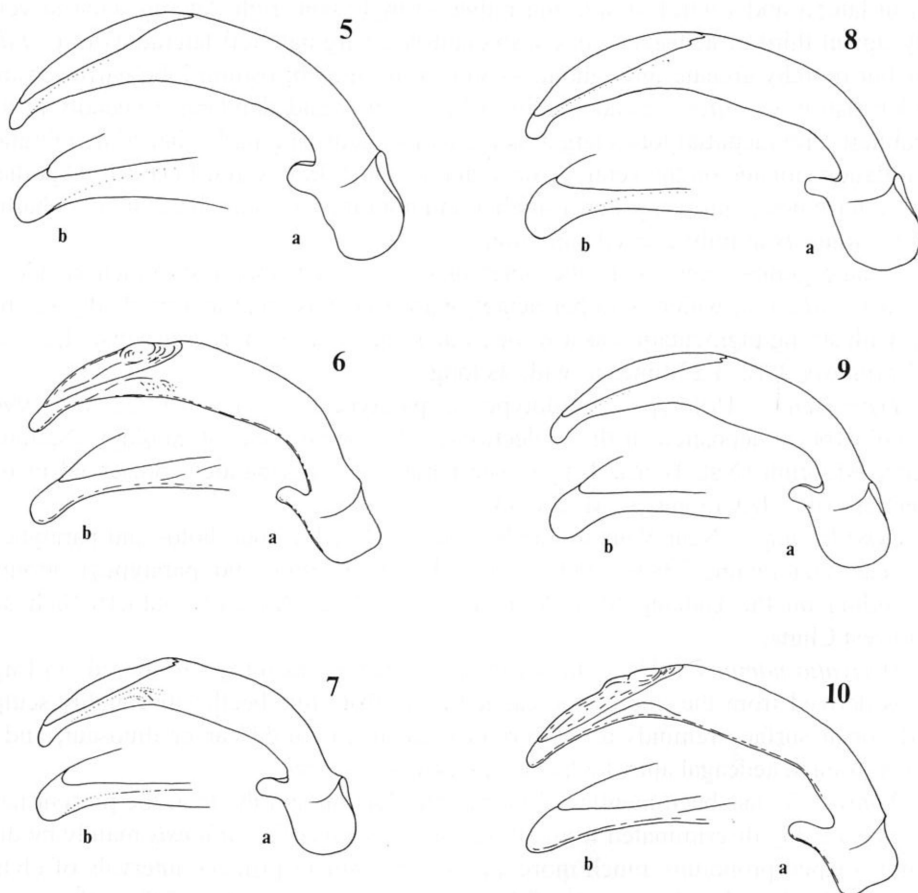
Type series. Holotype: ♂, allotype: ♀, paratypes: 1 ♂, 1 ♀, 19~22-VII-1996. The holotype is deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. The paratypes are separately preserved in the collections of Y. IMURA and K. MIZUSAWA.

Type locality. Near Wahou, 2,600–2,700 m (1 ♂, 1 ♀ incl. holo- and paratypes) and near Yizi-yakou, 2,900–3,000 m (1 ♂, 1 ♀ incl. allo- and paratypes), around Dafengding on the Daliang Shan Mountains, in Meigu Xian of southern Sichuan, Southwest China.

Derivatio nominis. The name of the new species, meaning "armoured" in English, is derived from the impression carried away from this beetle; its roughly sculptured dorsal surface reminds us of certain kind of armoured car or dinosaur, and a sharply pointed aedeagal apex looks like a sickle- or spearhead.

Notes. As has been mentioned in the introduction and the text, the present new species is readily discriminated from all the known forms of *C. taliensis* mainly by differently shaped pronotum, much more strongly prominent primary intervals of elytra and much slenderer basal segments of the male foretarsus, as well as differently shaped male genital organ. It is also characteristic in lacking marginal setae of the pronotum, which is preserved in all the known forms of *C. taliensis*. The hair pads on the ventral surface of the male foretarsus are visible only in the basal three segments in the new species under consideration, while it is rather exceptional for *C. taliensis* whose male foretarsus is hairy in the basal four segments except in such subspecies as *mulianus* and *cangshanensis*. These differences seem to give the beetle a taxonomic status not at the new subspecies level within *C. taliensis* but at the level specifically different from the latter. It is considered to be a unique second representative of the subgenus *Pseudocoptolabrus* in the Chinese territory. The occurrence of the members of this subgenus is rather sporadic, but its whole range seems to be restricted to an area from the northwestern part of Yunnan to the southern or southwestern end of Sichuan near the Yunnanese borders (*vid.* Fig. 17).

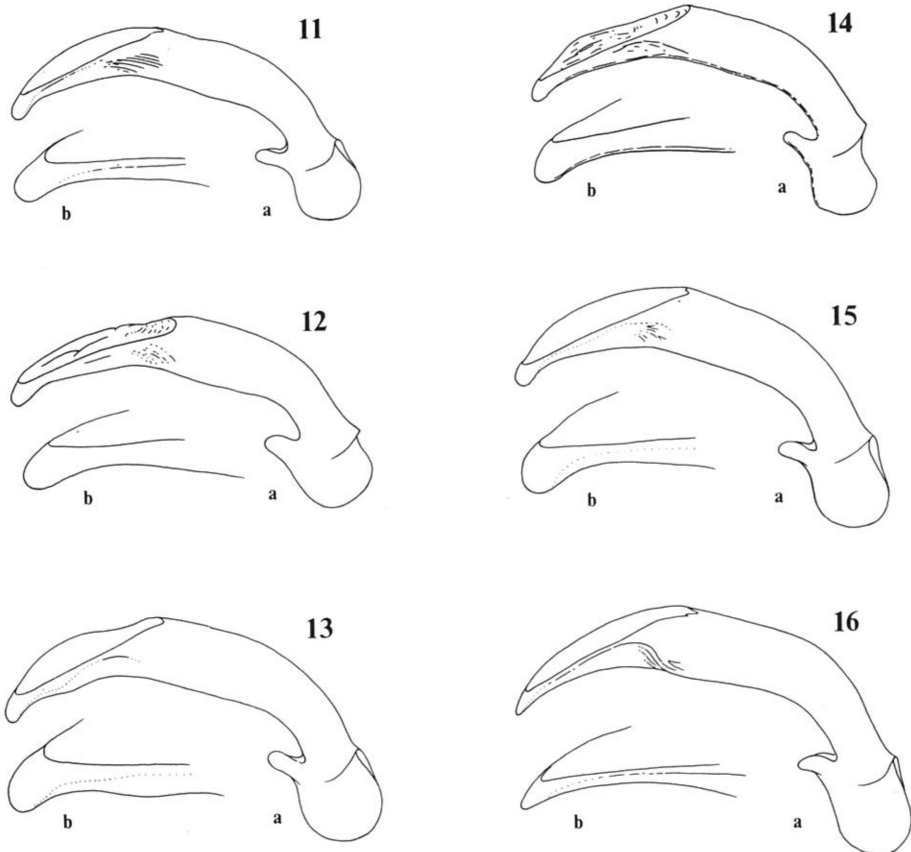
There is, however, one more species most presumably belonging to the same subgenus, namely, *Carabus burmanensis* BREUNING. It is known so far only from the



Figs. 5–10. Male genital organ of *Carabus (Pseudocoelolabus) taliensis* subspp. — 5, *C. (P.) taliensis aesculapius* (holotype), from “near Tali (=Dali)”; 6, *C. (P.) t. weibaoensis* (holotype), from “Weibao, 3,000 m” (redrawn after DEUVE, 1992); 7, *C. (P.) t. cangshanensis* (holotype), from “Cang Mts., 4,000 m”; 8, *C. (P.) t. lijiangensis* (paratype), from “Ganhaizi pass, 3,000–3,500 m, Yulongshan Mts.”; 9, *C. (P.) t. yulongshensis*, from “Yulongshan Mts., 4,100 m”; 10, *C. (P.) t. xueshanicola* (holotype), from “Habaxue Shan, 4,600 m” (redrawn after DEUVE, 1992); a, aedeagus in right lateral view; b, apical part of aedeagus in the same view.

mountainous region of the northernmost part of Myanmar, and is doubtless related to the above two Chinese species. DEUVE (1991, p. 18) erected a new subgenus *Nigracoptolabus* for the Myanmar species, but I prefer to regard it as a member of REITTER's subgenus based upon the external and the genitalic findings I have taken from the female holotype now preserved in the Natural History Museum, London.

Morphologically, *Pseudocoelolabus* should be placed near the *Damaster–Coptolabus–Acoptolabus* lineage or at the side of the *Megodontus* lineage of the subdivi-



Figs. 11–16. Male genital organ of *Carabus (Pseudocoptolabrus)* spp. — 11, *C. (P.) taliensis kezukai* (holotype), from “Mt. Baimaxue Shan, 4,300 m”; 12, *C. (P.) t. atentsensis* (holotype), from “Atentse (=Dêqên)” (redrawn after DEUVE & IMURA, 1991, p. 147); 13, *C. (P.) t. yanmenensis* (holotype), from “Hengduan mts-part MEILL, 3,700 m”; 14, *C. (P.) t. wengshuiensis* (holotype), from “route entre Xiangcheng et Wengshui, col à 35 km au sud de Xiangcheng et 15 km au nord de Wengshui, 3,500 m” (redrawn after DEUVE, 1994, p. 468); 15, *C. (P.) t. mulianus* (holotype), from “30 km NW Muli/Bowa, ca. 3,500 m”; 16, *C. (P.) armiger* nov. (holotype) from near Wahou, 2,600–2,700 m, around Dafengding on the Daliang Shan Mts.; a, aedeagus in right lateral view; b, apical part of aedeagus in the same view.

sion Procrustimorphi, together with such Chinese subgenera as *Pagocarabus* (*sensu* IMURA, 1996), *Megodontoides* (*ibid.*), *Aristocarabus*, *Eccoptolabrus*, *Lasiocoptolabrus*, *Pseudocranion* and *Shunichiocarabus*. From the phylogenetical viewpoint, however, there is a possibility that this unique subgenus may have been derived from *Neoplesius* (*sensu* IMURA, 1996) or its relatives, whose distributional range overlaps, at least partly, that of *Pseudocoptolabrus* in the mountainous regions of Southwest China.

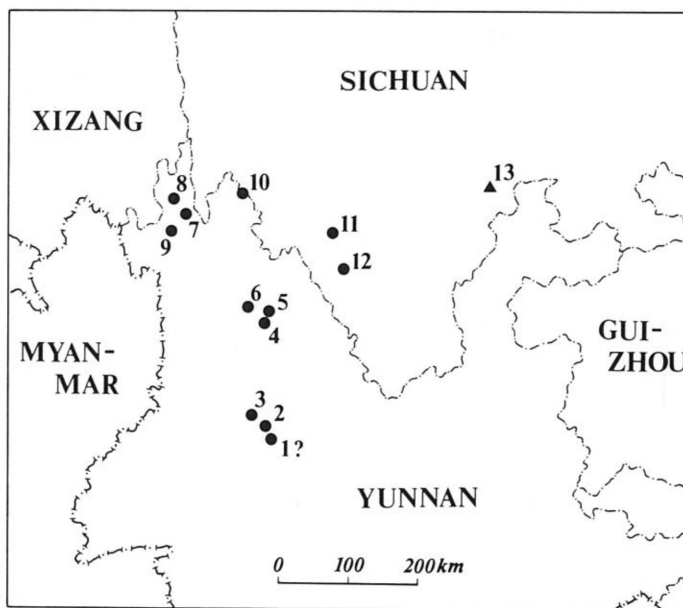


Fig. 17. Map showing the known localities of *Carabus* (*Pseudocoeloptolabus*) spp. in Southwest China. Black circles: *C. (P.) taliensis*. Black triangle: *C. (P.) armiger* nov. — 1, *C. (P.) taliensis taliensis* ("Yunnan", probably near Dali); 2, *C. (P.) t. aesculapius* (near Dali); 3, *C. (P.) t. cangshanensis* (Mt. Cang Shan); 4, *C. (P.) t. lijiangensis* (Mt. Yulongxue Shan); 5, *C. (P.) t. yulongxueensis* (Mt. Yulongxue Shan); 6, *C. (P.) t. xueshanicola* (Mt. Habaxue Shan); 7, *C. (P.) t. kezukai* (Mt. Baimaxue Shan); 8, *C. (P.) t. atentsensis* (Dêqên); 9, *C. (P.) t. yanmenensis* (near Yanmen on the Hengduanshan Mts.); 10, *C. (P.) t. wengshuiensis* (Wengshui—Xiangcheng); 11, *C. (P.) t. mulianus* (30 km NW from Muli); 12, *C. (P.) t. stupaensis* (Pass between Yanyuan and Muli); 13, *C. (P.) armiger* nov. (near Dafengding on the Daliang Shan Mts.).

要 約

井村有希：四川省南部から発見された中国産ヌバタマキンオサムシ亜属第2の種。——ヌバタマキンオサムシ亜属 *Pseudocoeloptolabus* は、多条オサムシ群のなかのヨロイオサムシ亜群に属する広義のオサムシ属 *Carabus* (s. lat.) の一員で、中国国内においては、云南省北西部から四川省南西端にかけての山岳地帯に特産し、顕著な変異を示す基準種のヌバタマキンオサムシ *C. (P.) taliensis* FAIRMAIRE のみが知られていた。筆者は最近、四川省南部の大凉山 Daliang Shan 高所にある大風頂 Dafengding 付近から得られた、本亜属の一員と考えられるオサムシを検査する機会があり、これまでに知られているヌバタマキンオサムシのすべての亜種と比較検討した結果、前胸背板、上翅彫刻、♂交尾器の形態などに一定の明瞭な相違を認めた。したがって、本論文において、大涼山の種にサムライヌバタマキンオサムシ *C. (P.) armiger* という名を与え、新種として記載する。本種は、中国産の同亜属のものとしては第2の、また世界的にみれば、ミャンマー北部高地帯からごくわずかな標本が知られているにすぎないビルマヌバタマキンオサムシ *C. (P.) burmanensis* BREUNING につぐ第3の種ということになる。なお、本論文において、♂

交尾器内袋を完全に反転させたときに、その前方 1/3 から 1/4 付近の腹側にみられる 1 対の膜状膨隆部に対して、脚葉 *podian lobe* という名称をあらたに提唱した。

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Description of the Male of *Carabus burmanensis* BREUNING

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Carabus burmanensis was described by BREUNING (1937, *Best.-Tab. eur. Coleopt.*, (110), pp. 1489-1490) for a single female specimen collected from "Ober-Burma, Seinghku-Tal", as a