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with Descriptions of Four New Species (Hymenoptera: Bethylidae)

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Discovery of the Genus *Parascleroderma* Kieffer from the Oriental Region, with Descriptions of Four New Species (Hymenoptera: Bethyilidae)

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Abstract. The genus *Parascleroderma* Kieffer is newly recorded from the Oriental Region on the basis of *P. atayal* sp. nov., *P. thaiana* sp. nov., *P. okajimai* sp. nov. and *P. renaiensis* sp. nov.

Key words: Hymenoptera, Bethyilidae, *Parascleroderma*, new species, Taiwan, Thailand.

Introduction

The bethylid wasp genus *Parascleroderma* Kieffer, 1905, belongs to the subfamily Pristocerinae and is represented by 22 species: 15 from the Palaearctic, 2 from the Ethiopian, 4 from the Nearctic, and 1 from the Neotropical Region (Argaman, 1988; Gordh & Móczár, 1990; Terayama, 1996).

In the course of my study on the bethylid fauna of Asia, I have examined several specimens of the genus from Taiwan and Thailand which undoubtedly represent a new record of this genus from the Oriental Region. After careful examination, I recognize four new species, which are described and illustrated herein.

The following abbreviations are used in this paper: HL-head length; HW-head width; WF-width of frons; LA-length of alitrunk; LP-length of propodeum; LPD-length of propodeal disc; WPD-width of propodeal disc; FWL-forewing length; TL-total body length; EL-eye length; POL-distance between posterior ocelli; AOL-distance between posterior ocellus and anterior ocellus; OOL-distance from a posterior ocellus to nearest eye margin; WOT-distance across and including posterior ocelli; NSMT-National Science Museum, Tokyo; PMA-Provincial Museum of Alberta, Canada; NIAES-National Institute of Agro-Environmental Sciences, Tsukuba.

Genus *Parascleroderma* Kieffer

Parascleroderma Kieffer, 1904, Ann. Mus. Civ. Str. Nat. Genova, Ser. 3, 1: 376. Type species: *Parascleroderma fulviceps* Kieffer, by monotypy.

Ceratepyris Kieffer, 1905, Spec. Hym. Eur. & Algér., 9: 246, 285–286. Type species: *Ceratepyris fuscipennis* Kieffer, by monotypy. [Synonymized by Argaman, 1988].

All the *Parascleroderma* species show strong sexual dimorphism: males are fully winged and have ocelli, whereas females are completely apterous and lack ocelli. Therefore, conspecificity of specimens belonging to different sexes is usually very difficult to determine, unless specimens of the two sexes captured at the same time and place are available. The followings are diagnosis of males and females in this genus.

Males. Maxillary palpi with 6 to 3 segments, labial with 3 or 2; clypeus not strongly projecting anteriorly; antennae short to relatively short, submoniliform; eyes large, evenly convex, hairless; malar space not developed; ocelli forming an obtuse triangle, situated close to the occipital margin; scutellum and propodeum not nearly in contact medially; metanotum with a small fovea at middle; propodeal disc with one discal carina (median carina) only; surface smooth or weakly microreticulate, without rugae; transverse carina present at posterior end of disc; forewings without postmarginal vein; basal vein arising far from the level of pterostigma; radial vein with a stub of a vein arising near the base (with a few exceptions); subgenital plate with 3 basal stalks.

Females. Body strongly depressed dorsoventrally; maxillary palpi with 3 segments, labial with 2; clypeus simple, not strongly projecting anteriorly; eyes each consisting of 10 to 50 facets; mesopleura produced laterally; mesonotum small, subtriangular or rectangular; scutellum absent; propodeum very long, with lateral margins almost parallel in dorsal view; propodeal spiracles remote from the base of propodeum; outer margin of middle tibiae without spines.

Parascleroderma atayal sp. nov.

(Figs. 1–8)

Holotype. Male. HL 0.73 mm; HW 0.73 mm; WF 0.53 mm; LA 0.83 mm; LPD 0.58 mm; WPD 0.55 mm; FWL 2.9 mm; TL 5.0 mm.

Head and alitrunk black; gaster blackish brown; mandibles and antennae black; coxae and trochanters blackish brown; femora almost black; tibiae brown; tarsi yellowish brown.

Head as long as wide, with convex sides and almost straight but very weakly concave posterior margin in frontal view; sides of head uniformly converging from eye tops to vertex; frons and vertex microreticulate with shallow punctures very sparsely. Maxillary palpi with 6 segments, labial with 3 segments. Mandibles each with 5 teeth; apical tooth acute and largest; basal 2nd and 3rd teeth smaller than the others. Median lobe of clypeus small; anterior margin broadly rounded. First 5 segments of antennae in a ratio of 11 : 5 : 5 : 4 : 4 in length;

scape $2.7\times$ as long as wide; pedicel $1.6\times$ as long as wide; 3rd segment $1.5\times$ as long as wide; 4th segment $1.3\times$ as long as wide; 5th to 8th segments each slightly longer than wide. Eyes 0.33 mm in length, without hair; WF $1.61\times$ EL. Ocellar triangle flat; POL : AOL = 5 : 2; OOL $1.1\times$ WOT.

Pronotum microreticulate and simple, without carina or other structural modification. Mesonotum microreticulate; notauli narrow and gradually converging to the base. Propo-

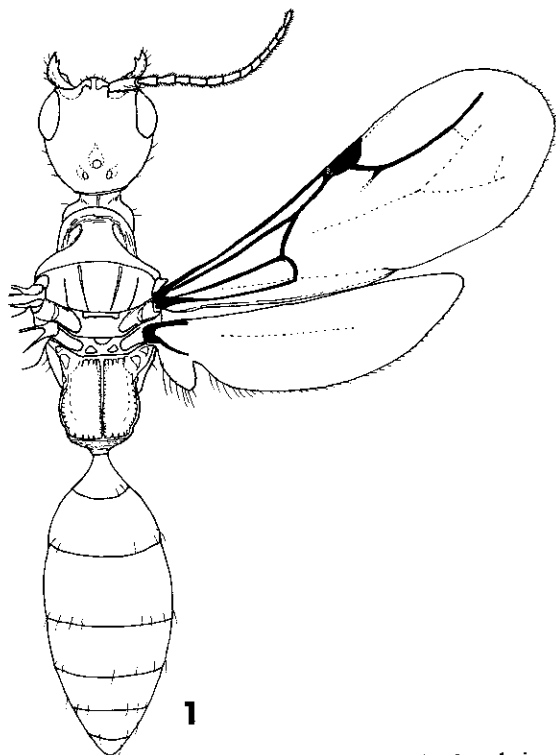


Fig. 1. *Parascleroderma atayal* sp. nov., male, dorsal view.

deal disc $1.05\times$ as long as wide, widest at posterior 1/3 in dorsal view; lateral and transverse carinae present; disc microreticulate with a median carina.

Gaster sessile. Subgenital plate deeply incised posteriorly, with 3 basal stalks. Genitalia as in Figs. 7 and 8; paramere broad, forming a subtriangular lobe; aedeagus large and oval, with a pair of hook-like apical projections.

Pterostigma relatively large, $2.0\times$ as long as wide; basal vein arising at apical 1/5 of subcosta; radial vein long, moderately curved, a stub of a vein arising near the base on radial.

Holotype. Male, Ren-ai Xian (1,700 m alt.), Nantou Hsien, Taiwan, 28. III. 1989, M. Terayama leg. [NSMT.]

Etymology. This species is named in honor of the people living in central Taiwan.

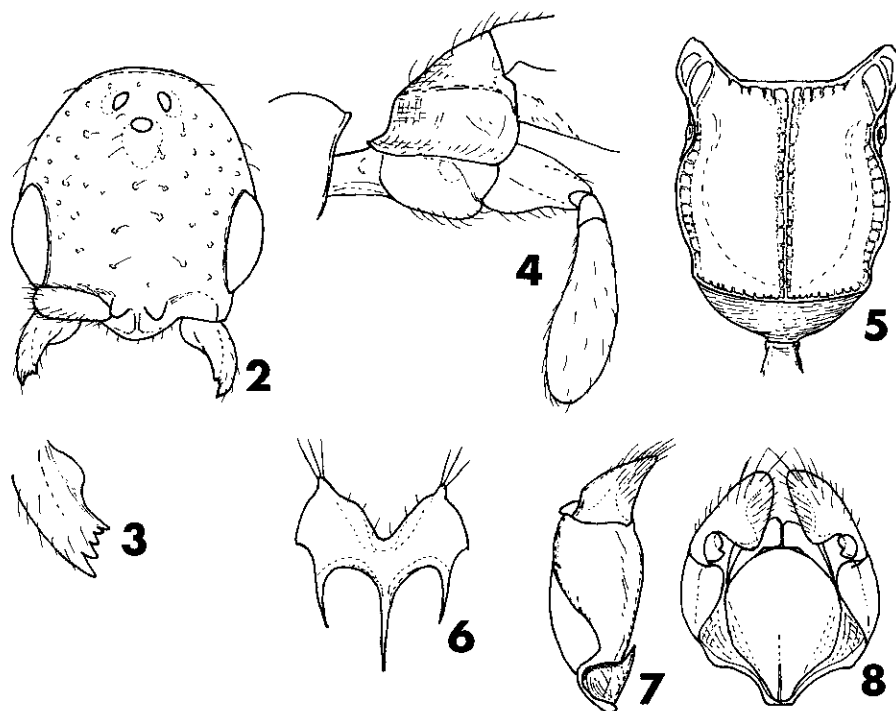
Remarks. This species resembles *P. cispnora* Argaman, 1988, from Israel, Italy and Turkey by the 6-segmented maxillary palpi, 3-segmented labial palpi, and simple pronotum without transverse carina or other structural modification. However, it is easily distinguished from the latter by the broadly convex anterior margin of clypeus, and the uniformly converging sides of head from eye tops to vertex crest.

Parascleroderma thaiana sp. nov.

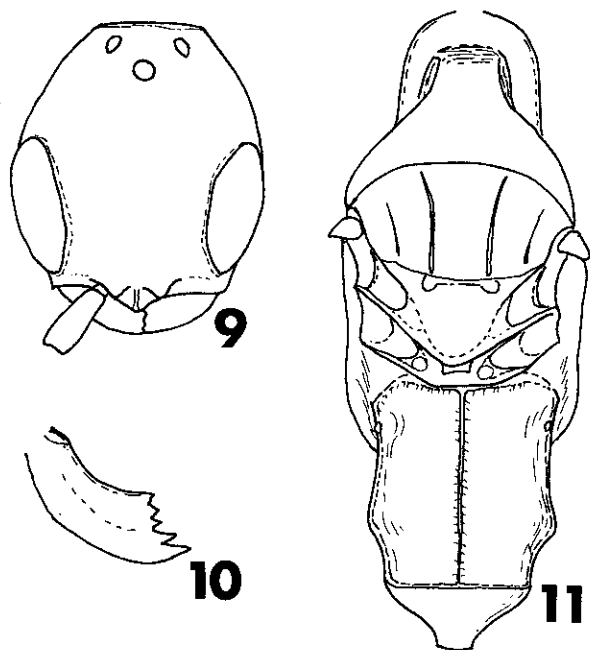
(Figs. 9–11)

Holotype. Male. HL 0.73 mm; HW 0.60 mm; WF 0.38 mm; LA 1.38 mm; LPD 0.45 mm; WPD 0.45 mm; FWL 2.3 mm; TL 3.8 mm.

Head and alitrunk black; gaster blackish brown; antennal scapes brown excepting anterior 1/5 yellow; 2nd and 3rd antennomeres yellow, 4th to terminal segments brown; coxae and femora dark brown; tibiae and tarsi yellow.



Figs. 2–8. *Parascleroderma atayal* sp. nov., male. — 2, head, frontal view; 3, mandible; 4, pronotum, lateral view; 5, propodeum, dorsal view; 6, subgenital plate; 7, genitalia, lateral view; 8, ditto, dorsal view.



Figs. 9–11. *Parascleroderma thaiana* sp. nov., male. — 9, head, frontal view; 10, mandible; 11, alitrunk, dorsal view.

Head $1.22\times$ as long as wide, with straight posterior margin in frontal view; sides of head uniformly converging from eye tops to vertex crest; frons and vertex microreticulate and with scattered shallow small punctures. Median lobe of clypeus small; its anterior margin broadly rounded. Maxillary palpi with 6 segments, labial with 3 segments. Mandibles each with 5 teeth; basal 3 teeth smallest, apical second larger and apical-most largest. First 5 antennomeres in a ratio of $10 : 4 : 4 : 3.5 : 3.5$ in length; scape $2.5\times$ as long as wide; pedicel $1.7\times$ as long as wide; 3rd to 5th segments each $1.5\times$ as long as wide. Eyes 0.30 mm in length, hairless. Ocellar triangle flat; POL: AOL = $5 : 2$; OOL $1.0\times$ WOT.

Pro- and mesonotum microreticulate; pronotum without carina or other structural modification; notauli linear and gently converging to the base. Propodeal disc longer than wide, broadest at posterior $1/3$, and weakly microreticulate; median carina reaching transverse carina; lateral carinae present.

Gaster sessile; 1st and 2nd gastral tergites smooth and shining; 3rd to 6th tergites evenly subopaque and very weakly microreticulate.

Pterostigma relatively large; median vein of forewings arising at apical $1/4$ of subcosta; radial vein without stub near the base.

Paratypes. The paratypes vary in head length from 0.51 to 0.73 mm, and in head width from 0.40 to 0.53 mm. Head and propodeum each relatively much longer than wide in small-sized specimens.

Holotype. Male, Khao Yai N. P. (780 m alt.), Thailand, 10–16. IV. 1990, B. V. Brown leg. [PMA.]

Paratypes. One male, same locality of holotype, 16–24. IV. 1990, B. V. Brown leg. [PMA]; 2 males, same locality (700–800 m alt.), 18–24. IV. 1990, E. Fuller leg. [PMA]; 2 males, same locality, 10–17. II. 1989, T. W. Thormin leg. [PMA]; 3 males, Khao Yai N. P., Thailand, 18–24. IV. 1990, B. V. Brown leg. [PMA.]

Etymology. The specific epithet refers to the area of distribution.

Remarks. This species is separated from the other congeners by the following combination of characteristics: 1) Maxillary palpi with 6 segments and labial with 3 segments, 2) pronotum simple, without transverse carina or other structural modification, 3) head longer than wide, uniformly converging sides of head from eye tops to vertex crest, 4) radial vein simple, without stub near the base.

***Parascleroderma okajimai* sp. nov.**

(Figs. 12–15)

Holotype. Female. HL 0.55 mm; HW 0.43 mm; LA 0.90 mm; LP 0.45 mm; WPD 0.23 mm; TL 3.0 mm.

Body yellowish brown.

Head $1.29\times$ as long as wide, relatively weakly microreticulate, with slightly convex sides and straight posterior margin in frontal view; in lateral view $2.1\times$ as long as high. Mandibles each with 2 acute teeth. Clypeus slightly produced medially, with slightly concave anterior margin. Antennae with 13 segments; scape 0.18 mm in length, $2.3\times$ as long as wide; pedicel $1.3\times$ as long as wide; 3rd to 12th segments each as long as wide; apical segment $1.5\times$ as long as wide. Eyes 0.05 mm in diameter, each consisting of about 13 indistinct facets.

Pronotum microreticulate, 0.30 mm in width and slightly wider than long in dorsal view; anterolateral corners forming a dull angle. Mesonotum microreticulate, $0.57\times$ as long as wide. Mesopleura microreticulate. Propodeum $2.0\times$ as long as wide; maximum width $1.12\times$ minimum width in dorsal view.

Gaster petiolate, smooth and subopaque; maximum width 0.55 mm in dorsal view.

Legs short; femora strongly incrassate and weakly microreticulate; fore femora $2.0\times$ as long as wide.

Paratype. The paratype female smaller than the holotype, with the following measurements: HL 0.43 mm; HW 0.31 mm; LM 0.71 mm; LP 0.35 mm; WPD 0.19 mm; TL 2.4 mm.

Holotype. Female, Kuantzulin, Chiai Hsien, Taiwan, 22. VIII. 1993, S. Okajima leg. [NIAES.]

Paratype. Female, same data as holotype, [NIAES.]

Etymology. This species is named after Dr. S. Okajima for his kindness in offering me the specimens of this new species.

Remarks. Judging from the original descriptions, this species may resemble *P. fulviceps* Kieffer, 1906, from Sicily and *P. insolita* (Evans, 1963) from North America, but differs from the latter two in having the weakly convex sides of head and the relatively wider propodeum.

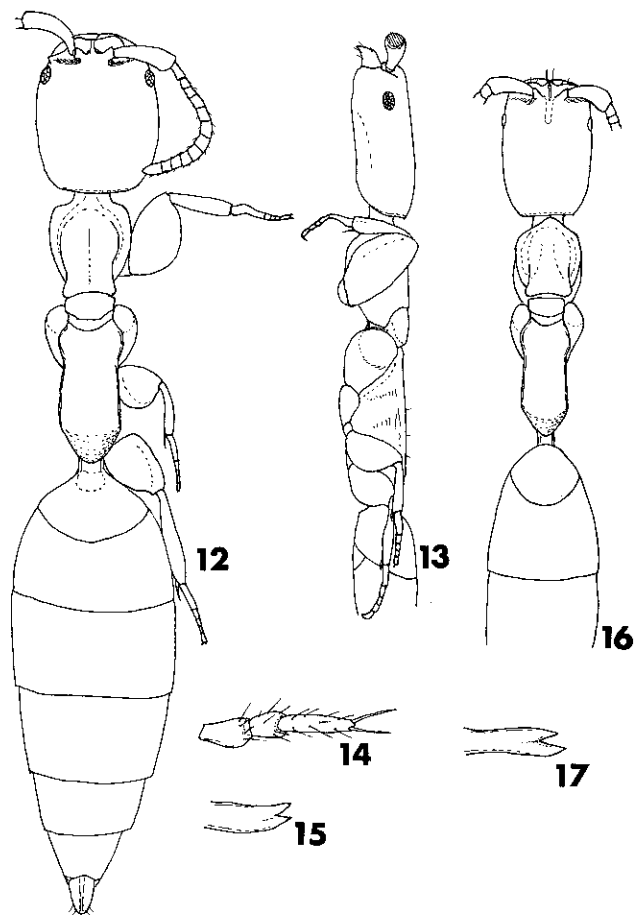
***Parascleroderma renaiensis* sp. nov.**

(Figs. 16–17)

Holotype. Female. HL 0.46 mm; HW 0.31 mm; LA 0.70 mm; LP 0.33 mm; WPD 0.20 mm; TL 2.5 mm.

Body yellowish brown.

Head $1.48\times$ as long as wide, smooth and shining, with parallel sides and straight posterior margin in frontal view; in



Figs. 12–17. *Parascleroderma okajimai* sp. nov. and *P. renaiensis* sp. nov., female. — 12–15. *Parascleroderma okajimai* sp. nov.; 16–17, *P. renaiensis* sp. nov. — 12, 16, body, dorsal view; 13, head and alitrunk, lateral view; 14, maxillary palp; 15, 17, mandible.

lateral view $2.40\times$ as long as high. Mandibles each with 2 acute teeth. Anterior margin of clypeus transverse, with a dull small median angle. Antennae with 13 segments; scape smooth, 0.15 mm in length, and $2.4\times$ as long as wide; pedicel as long as wide; 3rd and 4th segments each slightly wider than long, 5th to 12th segments each distinctly wider than long; apical segments $1.2\times$ as long as wide. Eyes 0.03 mm in diameter, each consisting of several indistinct facets.

Pronotum with smooth and shining disc and weakly microreticulate lateral surfaces; seen from above disc 0.21 mm wide and slightly wider than long, with rounded anterolateral cor-

ners. Mesonotum smooth, $0.6\times$ as long as wide. Mesopleura weakly microreticulate. Propodeum $1.65\times$ as long as wide, smooth and shining, with almost parallel sides in dorsal view; maximum width $1.14\times$ minimum width.

Gaster petiolate, smooth, and 0.45 mm in maximum width.

Legs short; femora smooth and strongly incrassate; fore femora $2.0\times$ as long as wide.

Holotype. Female, Nanshanchi (ca. 700 m alt.), Nanfencun, Ren-ai Xian, Nantou Hsien, Taiwan, 21. VIII. 1995, O. Kitade leg. [NSMT.]

Etymology. The specific epithet refers to the type locality.

Remarks. This species is easily separated from the forementioned species by the smooth head with parallel sides, the shape of clypeus with a median angle, and the smooth mesosomal dorsum. This sample was taken at rotten wood in an evergreen broad-leaved forest.

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