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Ropalidia Wasps in the Philippines (Hymenoptera, Vespidae)
(II) A New Species from Palawan, with Brief Notes on
the Distribution of Four Species

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Abstract A new species of the genus *Ropalidia* is described from Palawan Island, the Philippines. Distributions of *Ropalidia stigma stigma*, *R. cyathiformis*, *R. horni* and *R. lepida* in the Philippines are briefly noted with records of new localities.

Ropalidia wasps in the Philippines have been studied by several authors (VAN DER VECHT, 1941, 1962; KOJIMA, 1982, 1984). Information of their distribution, however, is still fragmentary, despite the interest of the Philippine species from the standpoint of zoogeography and speciation of the Southeast Asian *Ropalidia*. Especially the fauna of some of the main islands (such as Palawan and Mindanao) has been little known.

In the present paper, we describe a new species from Palawan Island, and give some notes on the distribution of *R. stigma stigma*, *R. cyathiformis*, *R. horni* and *R. lepida*.

We express our hearty thanks to the following persons who kindly provided us invaluable specimens or arranged loans of specimens in the collections of their museums: Dr. B. PETERSEN, Zoologisk Museum, Copenhagen; Mr. S. G. REYES, University of the Philippines at Los Baños; Dr. A. S. MENKE, U. S. National Museum; Dr. J. M. CARPENTER, Harvard University; Dr. L. A. CORPUZ-RAROS, Visayas State College of Agriculture; and Messers Y. HANEDA, T. MUROTA, H. KUROKAWA and Ms. C. NOZAKA.

Ropalidia palawana sp. nov.

(Figs. 1-10)

♀. Head moderately thick, in frontal view distinctly wider than high, in dorsal view a little more than twice as wide as long, broadly emarginate posteriorly, distinctly wider than thorax including tegulae. Temple moderately wide, in profile widest at the middle of eye, where it is *ca.* 3/4 times as wide as eye, then smoothly and weakly narrowed toward base of mandible. Occipital carina complete, fine,

on each side weakly and evenly curved over the length, not thickened ventrally. Antennae about as further from eyes as from each other; frons slightly convex, supraclypeal area a little raised. Clypeus hardly convex, *ca.* 6/5 times as wide (between points where clypeus touches eyes) as high (from bottom of dorsal emargination to apex), bluntly pointed apically, dorsal emargination rather deep. Malar space quite narrow. Ocelli arranged in nearly equilateral triangle, posterior ocelli a little less than 4 times as far from eye as from each other, the latter distance *ca.* 2/3 to their diameter. Antenna weakly swollen apically; scape a little flattened, slightly curved, *ca.* 4.5 times as long as wide at apex; segment II short, *ca.* 1/4 length of scape, segment III *ca.* 2.5 times as long as wide at apex, slightly longer than segments IV+V; segments IV and V nearly square in outline, segments VII-XI wider than long; terminal segment 5/4 times as long as wide at base.

Thorax rather short, in dorsal view *ca.* 1.5 times as long as wide. Pronotum in dorsal view broadly rounded anteriorly, with sides moderately converging anteriorly in nearly straight lines; pronotal carina sharp, hardly sinuate on sides; humeral angles not conspicuous. Scutum convex, slightly wider than long, with median line distinct at least in anterior half. Disk of scutellum trapezium-shaped, convex, laterally margined with weak carinae, median line distinct and slightly raised in anterior half. Metanotum nearly flat, posterolateral corners bluntly angled, not projecting, posterior margin weakly produced below in a blunt angle. Propodeum in posterodorsal view with sides weakly and more or less evenly curved; posterior face hardly convex, with shallow, rather wide median furrow; in profile posterior face of propodeum nearly straightly sloping down. Propodeal orifice hardly narrowed anteriorly, with rounded top, in posterodorsal view *ca.* 2.5 times as long as wide; propodeal valvula small, rounded-triangle in shape.

Gastral segment I weakly swollen posteriorly, with basal petiole about twice as long as wide; posterior widened part in dorsal view swollen in anterior half, then nearly parallel-sided in posterior half, a little longer than wide, *ca.* 3 times as wide as basal petiole; in profile dorsal face arising weakly beyond posterior margin of reception of propodeal muscle, weakly and more or less evenly convex; sides of tergite beneath approaching, though not very closely, to another before posterior triangle. Sternite I deeply emarginate posteriorly, posterior flattened triangle slightly wider than long. Gastral segment II about as wide as long, slightly longer than high; in dorsal view smoothly swollen in anterior half, then nearly parallel-sided, slightly constricted at apical margin, *ca.* 2.5 times as wide as tergite I, in profile vertically cut off at the end; apical lamella distinctly depressed and rather wide. Suture between tergite and sternite of this segment fine; articulation of tergite II hardly separated from neck in the middle, separated by slight truncation on the sides.

Body rather dull, covered with dense, fine tomentum and rather dense erect hairs, which are somewhat longer on clypeus than on other body parts; clypeus and metanotum shiny; eyes bare. Clypeus polished apically, with quite sparse,

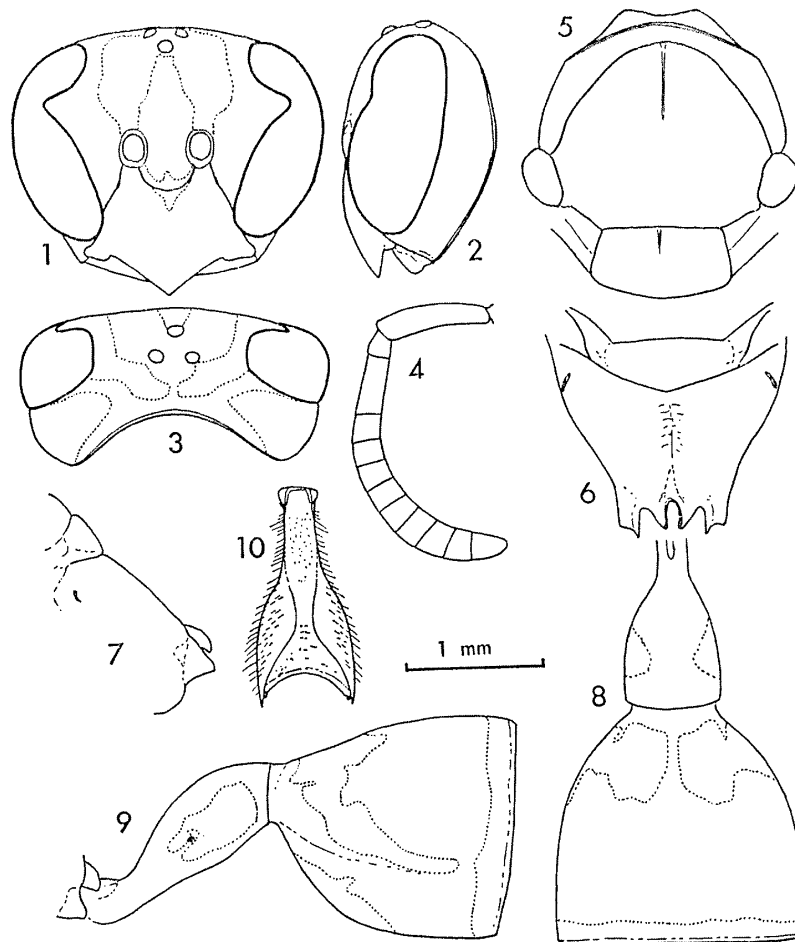


Fig. 1-10. *Ropalidia palawana* sp. nov., female — 1-3, Head (1, frontal view; 2, lateral view; 3, dorsal view); 4, antenna; 5, pronotum, scutum and scutellum in dorsal view; 6, 7, metanotum and propodeum (6, posterodorsal view; 7, lateral view); 8, 9, gastral segments I and II (8, dorsal view; 9, lateral view); 10, gastral segment I in ventral view. Scale line, 1 mm.

shallow and inconspicuous punctures. Frons with rather dense, but shallow punctures, each with a central postule and separated by 1 to 2 diameters. Vertex and temples feebly punctate. Pronotum and scutum reticulately punctate, punctures shallow and ill-defined; scutellum, anterior margin and sides of metanotum with punctures, which are a little sparser but slightly larger than those on scutum; metanotum polished and impunctate posteriorly, polished area reaching near front margin in the middle. Posterodorsal area of mesepisternum superficially punctate, its anteroventral area impunctate, border between them not defined. Metapleura without punctures or striae. Propodeum with shallow, inconspicuous punctures on outer sides; posterior face impunctate, with faint traces of transverse striae. Posterior margin of gastral tergite I with rather dense, ill-defined punctures; tergite II densely covered with shallow, ill-defined punctures, punctures on sternite

II sparser but a little larger than those on tergite II. Posterior flattened area of sternite II shallowly and irregularly sculptured. Mid femur in anterior view with dense, quite short fringe and rather long, outstanding hairs on ventral margin.

Venations: second submarginal cell pentagonal, receiving both recurrent veins close to each other; third submarginal cell slightly narrowed above.

Black, extensively marked with yellow; antennae dark brown, scape yellow beneath, flagellum ferruginous ventrally. Yellow marks as follows: mandibles except brown teeth, clypeus entirely, a wide band on frons, separated from clypeus by a crown-like dark mark and reaching anterior ocellus, a band at inner orbit, filling eye emargination and often connected with a curved postocellar line, a wide band on temple, ending behind top of eye and dilated into occiput in ventral portion, so that lower part of occipital carina yellow, pronotum except anterior margin of pronotal collar and posterior margins, a pair of median bands and spots inside tegulae on scutum, tegulae except outer translucent spots, a large spot on each side of disk of scutellum, an anterior band of metanotum, large spots on lateral depressions of scutellum and metanotum, posterior half of mesepisternum except posterodorsal corner, a narrow band on posteroventral margin of metapleura, propodeum except a triangular spot above each valvula and median dark band which is about as wide as base of gastral tergite I, large lateral spots on gastral tergite I, a large spot on each side of anterior half of tergite II, which is dilated posteriorly along margin of tergite, a large central spot of sternite II, an apical band of gastral segment II, some parts of following gastral segments, coxae largely, apical parts of femora and some parts of tibiae and tarsi of fore and mid legs. Wings hyaline, slightly infuscate along anterior margin of fore wings.

Length (h.+th.+t.1+2): 7 mm.

♂. Unknown.

Remarks. This species seems to be close to *R. extrema* and *R. opifex*, but is distinct not only in color pattern but also in having dense punctures on the gastral segment II.

Holotype ♀, Palawan, Mantalingajan, Pingisan 600 m, 10 Sept. 1961, Noona Dan Exp. 61-62 (Zoologisk Museum, Copenhagen, Denmark).

Paratypes: Same locality, 1 ♀, 1 Sept. 1961; 1 ♀, 6 Sept. 1961; 1 ♀, 22 Sept. 1961. Brooke's Point, Uring Uring, 1 ♀, 31 August 1961, Noona Dan Exp. 61-62. San Rafael, 1 ♀, 1 iv 1983, T. TANO. Iwahig, 1 ♀, 30 iii 1983, T. TANO. Deposited in Zoologisk Museum, Copenhagen; Tokyo Metropolitan University; University of the Philippines at Los Baños.

Ropalidia stigma stigma (SMITH)

This subspecies is widely distributed in the subcontinental India and Southeast Asia. In the Philippines, it has been recorded from several places on Luzon and Mindoro Islands (VAN DER VECHT, 1941, 1962; KOJIMA, 1984). Specimens sent

from Visayas State College of Agriculture included four females of this subspecies collected on Leyte Island.

This subspecies seems to be rather rare in the Philippines and is supposed to be continental origin. Further investigation on the distribution of this subspecies in the Philippines may enable us to estimate the route of dispersal to the Philippines.

Specimens examined. LEYTE I.: Baybay, Mt. Pangasugan, A. Almeroda, 1 ♀, 8 III 1983; 1 ♀, 14 III 1983; 1 ♀, 21 VII 1983; 1 ♀, 28 VII 1983.

Ropalidia cyathiformis (FABRICIUS)

The present species is widely distributed in Southeast Asia. In the Philippines, it has been recorded only from Luzon Island (VAN DER VECHT, 1941, 1962; KOJIMA, 1984). In the course of this study, we examined specimens from Palawan, Cebu and Mindanao Islands. This species may be rather abundant on Luzon Island, and is expected to occur, though rather rarely, throughout the Philippine Islands.

The specimens from Cebu Island (25 ♀ 3 ♂) were collected from a single nest. Of these, one female has no second intercubital veins of both fore wings, so that it has only two submarginal cells (Fig. 11). Adding to this female, in four females the second intercubital vein of one of fore wings are completely or nearly disappearing. The subgenus *Paraicaria* is characterized with having only two submarginal cells, while the present species is considered to belong to the subgenus *Icariola* (RICHARDS, 1978).

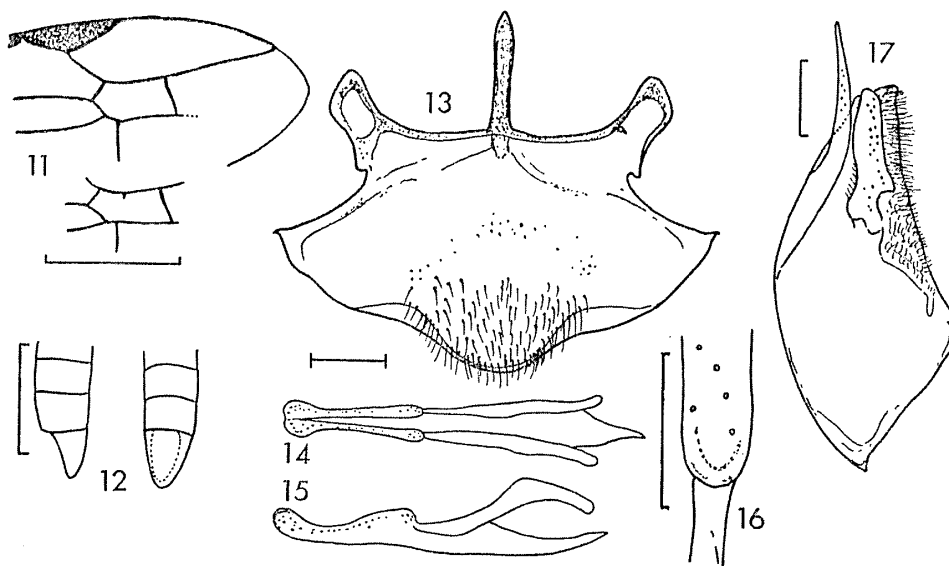
Specimens examined. PALAWAN I.: Iwahig, 1 ♀, 2 iv 1983, T. TANO; Calacusan, 1 ♀, 3 iv 1983, Y. HANEDA. CEBU I.: Camp 7, 25 km W. Cebu City, 400 m, 25 ♀ 3 ♂, 21–29 Sept. 1965, D. DAVIS, from a nest (U. S. National Museum). MINDANAO I.: Tagoloan, Bukidnon, 1 ♀, BAKER (U. S. National Museum).

Ropalidia horni SONAN

This species has been recorded from Palawan, Samar, Leyte and Mindanao Islands of the Philippines and from north Borneo (VAN DER VECHT, 1941, 1962; KOJIMA, 1984). The species seems to be not rare on Palawan and Mindanao

Islands. Out of nine females from Iwahig, Palawan, which were sent from the Museum of Comparative Zoology, Harvard University, seven females have the terminal antennal segments incised (Fig. 12).

Specimens examined. PALAWAN I.: Ingawan, 1 ♀ 7 ♂, 27 III 1983, Y. HANEDA; Iwahig, 9 ♀, 1908, C. M. WEBER (MCZ); 5 ♀ 2 ♂, 30 III 1983, T. TANO, 9 ♀, 2 IV 1983, T. TANO; 3 ♀ 1 ♂, 2 IV 1983, Y. HANEDA; San Rafael, 3 ♀ 2 ♂, 1 IV 1983, T. TANO; 1 ♀ 5 ♂, 1 IV 1983, T. MUROTA; 1 ♀ 4 ♂, 1 IV 1983, Y. HANEDA; Puerto Princesa, 6 ♀ 7 ♂, 23–26 III 1983, T. TANO; 4 ♀ 3 ♂, 25–26 III



Figs. 11-17. *Ropalidia* spp. — 11, Variation in the venation of fore wings of *R. cyathiformis*, scale line, 1 mm; 12, Terminal antennal segments of female *R. horni*, scale line, 0.5 mm; 13, *R. lepida*, male, gastral sternites VII+VIII, scale line, 0.2 mm; 14, 15, *do.*, aedeagus (14, ventral view; 15, lateral view), scale line, 0.2 mm; 16, *do.*, ventral view of ventral process of aedeagus, scale line, 0.1 mm; 17, *do.*, inner aspect of right paramere with volsella and digitus, scale line, 0.2 mm.

1983, T. MUROTA; 1 ♀ 1 ♂, 30 III 1983, T. MUROTA; 18 ♀ 2 ♂, 25-26 III 1983, Y. HANEDA; 1 ♀ 2 ♂, 30 III 1983, Y. HANEDA; 1 ♀, 5 IV 1983, Y. HANEDA; Brooke's Point, 1 ♀, 27 III 1983, T. TANO; 1 ♀, 28 III 1983, Y. HANEDA; Near Brooke's Point, 2 ♀ 4 ♂, 28 III 1983, T. TANO; 1 ♀, 28 III 1983, T. MUROTA; Quezon, 1 ♀ 5 ♂, 28 III 1983, T. TANO; Aborlan, 1 ♀ 1 ♂, 29 III 1983, T. TANO; 2 ♀, 4 IV 1983, T. MUROTA; 7 ♀ 1 ♂, 4 IV 1983, Y. HANEDA; Baheli, 2 ♀, 31 III 1983, T. TANO; 4 ♀ 2 ♂, 31 III 1983, Y. HANEDA; Near Narra, 2 ♀, 29 III 1983, T. MUROTA; 2 ♀, 29 III 1983, Y. HANEDA; Calacuasan, 1 ♀, 3 IV 1983, T. TANO; 3 ♀, 3 IV 1983, Y. HANEDA. MINDANAO I.: Malaybalay, 700 m, Bukidnon, 2 ♀ 1 ♂ 12 VIII 1980, C. NOZAKA; Malaybalay, 800 m, Bukidnon, 10 ♀, 13 VIII 1980, C. NOZAKA; 4 ♀, 13 VIII 1980, T. TANO; Near Malaybalay, Bukidnon, 4 ♀, 26-30 VII 1983, T. TANO; 2 ♀, 26-30 VII 1983, T. MUROTA; Davao, 1 ♀ 1 ♂, 3-6 VIII 1980, K. SABI; 1 ♀, 3-10 VIII 1980, T. MUROTA; 5 ♀ 2 ♂, 3-10 VIII 1980, T. TANO; 4 ♀, 6 VIII 1980, C. NOZAKA; Matina Heights, Davao, 2 ♀ 2 ♂, 4 VIII 1980, C. NOZAKA; Near Beach, Davao, 1 ♀, 5 VIII 1980, K. SABI; Mt. Apo, 700-1000 m, North Cotabato, 1 ♀, 7-9 VIII 1980, T. TANO; Pasonanka Park, Zamboanga, 2 ♀, 30-31 VII 1980, K. SABI; 1 ♀, 30-31 VII 1980, C. NOZAKA; 1 ♀, 30-31 VII 1980, T. TANO; 1 ♀, 30-31 VII 1980, T. MUROTA; Near Pasonanka Park, Zamboanga, 1 ♀, 2 VIII 1980, T. TANO; Claveria, Misamis Or., 1 ♀, 6 VIII 1983, H. KUROKAWA.

Ropalidia lepida VAN DER VECHT

After VAN DER VECHT (1962) described this species based on 8 ♀ 3 ♂ from Damalon and 1 ♂ from Los Baños (both on Luzon Island), no record of this species has been made. In addition to two females in the collection of U. S. National Museum and five ones of our own collection, we examined a female and several males, which Mr. S. G. REYES (University of the Philippines at Los Baños) collected on Mindanao Island and kindly sent to J. K.

Color pattern of males is rather variable as follows: median dark mark on clypeus usually reaching apex of clypeus, but sometimes narrowly separated by a apical yellow band; a large mark on mesepisternum often interrupted transversely by dark area; a spot on lower part of metapleura often absent; an apical band of first gastral tergite sometimes reduced or absent.

Male terminal sternites and genitalia are as in Figs. 13–17. They are similar to those of the Philippine consubgeneric members so far described for genitalia: *Ropalidia (Icarielia) extrema*, *R. (I.) flavobrunnea* and *R. (I.) nigrescens* (cf. KOJIMA, 1982). The ventral processes of aedeagus, however, do not have any teeth in *R. lepida*.

Specimens examined. MINDANAO I.: Butuan, 1 ♀, BAKER (USNM); Zamboanga del Sur, Lemesahan 600 m, 1 ♀, 7 IX 1958, H. E. MILLIRON (USNM); Mt. Apo, 1000–1500 m: 3 ♀, 9 VIII 1980, C. NOZAKA; 1 ♀, 9 VIII 1980, T. TANO; Mt. Apo, 1500 m, near Lake Agko, 1 ♀, 8 VIII 1980, H. KUROKAWA; Ilonavis, Mt. Apo, 3500 ft, 1 ♀, 25 V 1982, S. G. REYES; Mt. Kitanglad, Bukidnon, 12 ♂, 400–600 m, 27 May 1984, S. G. REYES; 4 ♂, 100–150 m, 15 May 1984, S. G. REYES.

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