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STUDIES ON THE GENUS TRYPOXYLON LATREILLE OF THE ORIENTAL AND AUSTRALIAN REGIONS (HYMENOPTERA, SPHECIDAE)

VII. SPECIES FROM THE PHILIPPINES

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MISHIMA

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Synopsis

Sixty-one species are recorded from the Philippines including descriptions of thiry-six new species and nine new subspecies, with 635 text-figures. In connection with the discovery of new relatives Trypoxylon vicinum m. that was combined with T. laeviceps as its geographical race in Part VI of the present paper was returned to its original status.

The material used in the present Part consists mainly of the collections of United States National Museum of Natural History, Washington, D. C. (collected mainly by C. F. Baker in the wide range of the Islands, but it is regret that the data label is always simple and without date), Bernice P. Bishop Museum, Honolulu (including considerable numbers collected by the late Dr. F. X. Williams), American Entomological Institute, Ann Arbor (all collected by Dr. H. and M. Townes and their family mainly in the northern half of the Philippines) and the private collections of the group of my followers in Fukui, Miss C. Nozaka and Messrs T. Tano, H. Kurokawa and T. Murota, and partly of the collections of British Museum (Natural History), London, Zoological Museum of University of Copenhagen, California Academy of Sciences, California and Swedish Museum of Natural History, Stockholm.

Of the collections those of American Entomological Institute and Swedish Museum of Natural History are a part of the specimens that were constructively sent to me for study recently by Dr. Henry Townes and Dr. Stellan Erlandsson respectively, to whose kind aid I wish to express my cordial thanks.

The specimens from the group of hymenopterists in Fukui are a part of the results of their repeated Expeditions to the Philippines that were commenced recently by them either in various groups or alone by utilizing their vacations and are still going on. As they are the experts they have collected a great number of specimens during a short period of each Expedition and their collections are of particular use to know the relative abundance of the species captured by them. I thank them for their kindness in placing their valuable specimens at my disposal at the sacrifice of their own investigations.

The most remarkable fact in the Trypoxylon fauna of the Philippin-

es lies in that many of the closely allied and more or less different forms occur over the Islands, a form being confined in distribution to one or some nearly located islands - a good proof for the Darwinian theory. When the difference is slight and is related to some unimportant characters they are easily considered to represent geographical forms or races. But when the difference is considerable or related to certain characters that are usually comparatively constant to the species concerned a question arises as to whether they should be treated as different species, or as different subspecies. Especially when the material is too scanty in numbers to confirm the range of variation of the characters, or lacks the male specimen, the genitalia of which offen afford a reliable clue, it is difficult to give final conclusion. In such cases it becomes inevitable that they are provisionally allocated to some taxonomic rank.

A second notable fact which has close connection with the fact above mentioned is the discovery of closely related species of T. appendiculatum m. and T. buddha Cameron respectively, each of which is very characteristic in a certain character and has been believed that each is easily separable from others by even a rough examination of the restricted character concerned. But the new discoveries of the respective relatives have made it impossible to identify the species by such a simple examination.

A third finding is that against the general belief concerning the tropical insects except social ones and Lepidoptera that in tropics the number of the species is rich, but the number of the individual of a species is scarce, some species are rich and abundant in individual number in the Philippines, although the belief is generally true relative to other species. Among such flourishing species are included T. schmiedeknechti Kohl, thaianum philippinicum m., appendiculatum m. and ashmeadi Baltazar. But whether they are common and abundant in the cool high altitude only, or even also in the hot flat land so is not always clear.

Speaking to the species distribution, very many are endemic to the Philippines, or to some of the islands, as was also the case of Borneo. These are besides the 36 new species (see index) four known: T. bakeri, palawanum, insulare and ashmeadi. On the other hand, the species common with Borneo are very few (balabacense, auropilosum, varipiloides and laeviceps), except the following widely spread species: appendiculatum, bicolor, errans, flavipes, fulvocollare, mindanaonis, petiolatum, rufiventre, schmiedeknechti, singaporense, striolatum, thaianum and varipilosum.

As to the widely spread species those which are found in Borneo and not in the Philippines are only one, namely T. ornatigaster, while those which are not found in Borneo and found in the Philippines are three: buddha, fletcheri and lobatifrons. The latter may occur in Borneo also, but have not been collected yet there. As to the former Borneo may be the place of the northernmost distribution of the species, but further explorations in the Philippines are necessary.

Making a passing reference to Formosa, in the Philippines the species common with Formosa is none except the following three widely spread species, namely, errans, petiolatum and schmiedeknechti.

As for the species number of the Philippines my impression after the present study is that it will be doubled or much more increased if each of the main Islands is investigated as detailed as Formosa.

ABBREVIATIONS

A1, A2 and so on ... Antennal joint 1, Antennal joint 2 ...
A10-12 ... A10+A11+A12.
ASR ... Antennal socket rim (raised upper part of antennal socket)
AW ... Apical width or With at apex (always maximum width, in case of A3 very frequently in lateral view.
BW ...Basal width or Width at base (always maximum width near base).
CV1, CV2 ... Abscissa 1 of cubital vein, Abscissa 2 of cubital vein ... (see p. 12).
G1, G2 ... Gastral segment 1, Gastral segment 2 ...
GSR ... Gastral socket rim, really the dorsal rim of socket of lifting muscle of gaster (sometimes simple and not raised, but frequenly highly, roundly or subtriangularly raised).
HL ... Head length at inner orbit in dorsal view (not in middle where particularly longer due to SAT).
HW ... Head width in dorsal view (always maximum width).
IAA ... Interantennal area.
IAF ... Interantennal furrow.
IOD ... Interocular distance or distance between eyes.
IODc ... Minimum IOD at about base of clypeus (frontal view).
IODv ... Minimum IOD at vertex (dorsal view).
IODs ... Ratio of IODv to IODc, usually shown by IODv as 10.
L/W ... Ratio of length to width.
Ma ... Maximum width (in case of gastral petiole dorsal view).
Mi ... Minimum width (ditto, usually just behind basal condyle, but sometimes in front of apical swelling).
2(Ma), 3(Ma) ... Length of G2 (Maximum width of G2), ditto of G3.
OOD (or OD) ... Ocellocular distance, namely the distaene between inner margin of compound eye and outer margin of hind ocellus.
Od ... Ocellar diameter (transversely measured).
P ... Petiole = G1
PAF ... Post antennal furrow, transverse or oblique furrow between ASR and SAT.
PD ... Puncture diameter.
PIS ... Puncture interspace.
POD ... Postocellar distance, distance beteeen inner margins of hind ocelli.
RC ... Radial cell of fore wing (see p. 12).
R1 ... Apical produced part of R1 beyond the meeting point with Rs, often very long.
SAT ... Supraantennal tubercle, nasiform or tuberiform, characteristic to species.
TCV ... Transverse cubital vein (see p. 12).
T1, T2 ... Tarsal joint 1, tarsal joint 2 ...
W:L ... Ratio of Width to Length.

FORMULAE

Formulae always show the relative length.

HW,HL,IODv,A3,A13,P= ... measured under the standard of HW as 100.
P,Ma,Mi,2(Ma),3(Ma)= ... measured under the standard of P as 100.
A3,4,5=...measured under the standard of A3 as 10.

On the KEY TO THE SPECIES

1. When a character is variable or intermediate and fits for both of the couplet the species is put under both of the couplet.
2. AW of A3 and BW of A13 are always measured from the widest side.
3. Length of gastral petiole (P or G1) is the total length, measured from the extreme base of basal condyle to the apex.

KEY TO THE SPECIES

1 Frons with shield-shaped enclosure, sometimes lateral carinae of the enclosure incomplete ..... scutatum group (see Part I)

a Upper lateral carinae with inward branch carinae, dorsal margin of enclosure transverse, 13–15 mm, Luzon, Samar, Negros, Mindanao
bakeri Tsuneki, 1978

– Upper lateral carinae without inward branch carinae, dorsal margin of enclosure rounded or subtriangular ..... b

b Upper area of enclosure above lateral angles less than 1.5 times as long as lower area below lateral angles
schmiedeknechti Kohl, 1906

– Upper area of enclosure more than 1.5 times as long as lower area
thaianum philippinicum Tsuneki, 1978

– Frons without shield-shaped enclosure 2

2 Supraantennal area with a small ship-shaped enclosure, widely open upwards, not reaching middle of frons (cf. Figs. 11–13, clypeus: Fig. 14, gaster: Fig. 16, IODs÷IO:4, A3=AW×3, frons flat, mesoscutum weakly microcoriaceous and finely closely punctured, propodeum with lateral carinae, area dorsalis enclosed with furrow, RC=B, fore and mid legs largely, hind leg partly yellow, gaster at intersegmental areas of G1–2–3–4 narrowly yellowish), 6.5 mm, Luzon
townesorum sp. nov., ♀

– Supraantennal area without such a structure 3

3 G1 clavate, gradually widening apically, appr. as long as G2 + G3 4

– G1 flask-shaped, apical swelling rather sudden, with a parallel-sided stalk area before swelling, G1 longer than G2 + G3 (rarely ≒ G2 + G3) 32

4 G2 slender and long, appr. twice as long as wide at apex, or G1, 2, 3 carrying a minute fovea at apical margin in middle (propodeum extended posteriorly beyond base of hind coxa) 5

– G2 robuster, less than twice as long as wide at apex (always without fovea on G1, 2 and 3) 25

5 G1, 2, 3 each with a minute fovea at apex in middle, sometimes some of them lacking or weak and indistinct 6

– G1, 2, 3 without fovea (SAT triangular at apex in dorsal view, surface nearly flat, ASR raised as a mass and separated from SAT with a deep furrow, propodeum with distinct lateral carinae and despite long extension posteriorly propodeal sternite not well developed, only at base narrowly present, the rest of underside membraneous and whitish) 15

6 Frons longitudinally highly raised and deeply furrowed in middle, surface without microsculpture, shining and very strongly coarsely punctured, mesoscutum punctured as on frons, SAT long, highly ridged, legs largely black, CV1≦CV2×2*), 9–11 mm 7

– Frontal structure and punctuation different (SAT low, near tuberiform, fore and mid legs largely and hind leg partly yellow, CV1>CV2×2) 10

7 ♀, antenna, legs normal, both wholly or largely black (G1, 2, 3 each with a distinct fovea) 8

– ♂, antenna and fore leg partly modified and maculated with white (frontal elevation higher, narrower and more acutely and deeply furrowed in middle than in ♀, some of the fovea on G1, 2, 3 weak and indistinct) 9

8 A1 at base and at apex narrowly and hind tibia at base ferruginous, tibial spurs whitish (supraantennal transverse carina low and triangularly incised in middle in dorsal view), India, Ceylon, Burma, Thailand, Malaya, Laos, Philippine (Mindoro, Sibuyan, Bagbatan, Mactan, Negros)
buddha Cameron, 1889

– A1 and hind tibia completely black, tibial spurs somewhat brownish (supraantennal transverse carina in dorsal view more highly raised and rounded, without incision in middle), Luzon
propinquum sp. nov.

9 A1 and A4 broader and more sharply maculated with white (Fig. 17), fore T1 at antero-distal end extended into a elongate plate (Fig. 24) (A5 shorter, broader, thinner and broadly excavated beneath into lamella (Fig. 19), A13 at dorsal side longer than A11+12, frontal furrow shallower, mid and hind legs partly white, medio-apical fovea on G1 deep and distinct, on G2 weak and indistinct, on G3 almost lacking), distribution: see ♀
buddha Cameron, 1889

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* In the key of Pt. III ×2 is escaped.

– A1 and A4 narrower and less sharply maculated with ferruginous colour (Fig. 32), fore T1 at antero-distal end simply pointed (A5 longer, narrower, thicker and excavated only at base beneath (Fig. 33), A13 shorter than A11+12, frontal furrow deeper, mid and hind legs without white mark, medio-apical fovea on G1 and 2 weak, on 3 usually almost lacking), Luzon propinquum sp. nov.

10 G1 without fovea at apex in middle, SAT anteriorly enlarged into flat elliptic plate and produced between both A1, propodeal sternite absent (head subquadrate, IODc very narrow, frons and mesoscutum without microsculpture, clypeus at apical margin in middle with a broad short protuberance, apex truncate, G2 sometimes AW × 1.7; in ♂ A10 excavated at base beneath, A13 > A10–12, G6 with a pair of haired carinulae at base beneath), 6 mm, Samar and Mindanao (nominate race: Singapore and Borneo) singaporense surigaonis ssp. nov.

— G1 distinctly foveate, SAT not produced between both A1, propodeal sternite present (A1 and 2 broadly yellow, collar thick, with distinct median tubercle, frons and mesoscutum microcoriaceous and punctured, area dorsalis distinctly raised, but without lateral furrows) 11

11 R1 markedly long, distinctly longer than TCV 12

— R1 moderately long, appr. as long as TCV 14

12 IODs=3:1 (A3÷AW×3.5, punctures on mesoscutum comparatively larger and closer, PIS<PD, fore and mid legs largely dark brown, area dorsalis not smooth, but finely closely striate), 8 mm, Samar (nominate form: Laos and Ceylon) flavipes breve ssp. nov., ♀

— IODs=2:1 13

13 All trochanters yellow, A3÷AW×4 (fore and mid femora largely yellow, SAT-ASR: Figs. 46–48, clypeus: Fig. 49), 9 mm, Curion curionum sp. nov., ♀

— Mid trochanter partly brown, hind trochanter largely black, A3÷AW×3(♀),×2 (♂) (fore and mid femora largely brown or black, SAT-ASR: Fig. 52, clypues: Fig. 53 (♂), 61 (♀), antenna: Fig. 54 (♂), pronotal lamina: Fig. 56(♀), 62(♂) R1 in ♀ only slightly longer than TCV), ♀ 7.5, ♂ 6.5 mm, Luzon tadaonis sp. nov.

14 Pronotum: Fig. 68, mid T1 and hind trochanter yellow (IODs=2:1, A3=AW×2, A7–8 excavated beneath, A8 produced at apex beneath, A13÷A11+12, gaster black, base of G2, 3, 4 slightly brownish), 6 mm, Palawan panitianum sp. nov., ♂

— Pronotum: Fig. 77, mid T1 and hind trochater dark brown (IODs=2:1, A3=AW×3, gaster black, but bases of G2, 3, 4 somewhat broadly ferruginous), 7 mm, Luzon markiling sp. nov., ♀

15 Subalar area with distinct pent-roof structure (mesoscutum distinctly microcoriaceous, half mat, SAT-ASR: Figs. 80–83, propodeum with lateral carinae, area dorsalis enclosed with weak furrow, clypeus: Fig. 84, A13: Fig. 85), about 10 mm, Luzon semperi sp. nov., ♂

— Subalar area without pent-roof structure 16

16 ♀ (ASR raised appr. as high as top level of SAT, 6–8 mm) 17

— ♂ 20

17 Subalar area without acute edge on outer margin except posterior portion 18

— Subalar area acutely edged on outer margin thoroughly and slightly produced over subalar pit, but not so expanded as to be called pent-roof structure 19

18 ASR on anterior aspect almost without fovea, only with a transversely elongated small flat or weakly concaved area at base (frons on upper portion finely, fairly closely punctured, mesoscutum also finely very closely punctured, surface not shining), North Borneo, Tawitawi and Busuanga laeviceps Tsuneki, 1976

— ASR with a large distinct fovea on anterior aspect which is obliquely located (frons on upper portion finely, very sparsely punctured, mesoscutum also with PIS larger than in laeviceps, in both the areas surface fairly shining), Malaya, Borneo and Philippines (Luzon, Mindoro, Samar, Laete and Negros) appendiculatum Tsuneki, 1974

19 ASR obliquely located, anterior aspect bearing fovea and facing anterolaterally (Fig. 152, lateral view), without bordering acute edge on inner marg margin (Fig. 153), 6 mm, Basilan and Mindanao basilanense sp. nov.

— (Anterior aspect of ASR together with its fovea facing forwards and obliquely upwards, only slightly inclined laterally (Figs. 133, 135), bearing an acute bordering edge on inner margin (Fig. 134), 6–6.5 mm, Java vicinum Tsuneki, 1979)

20 Subalar area without edge on outer margin 21
— Subalar area thoroughly edged on outer margin 23
21 ASR raised about as high as top level of SAT, somewhat obliquely located, rather rounded on top, without minute foveole there, fovea on anterior aspect shallow or nearly flat, located close to socket margin, in dorsal view: Fig. 116, dorso-lateral: Fig. 117, dorso-ventral: Fig.119), 5.5 mm, North Borneo, Tawitawi and Busuanga laeviceps Tsuneki, 1976
— ASR highly raised above top of SAT 22
22 ASR subcylindric, in dorsal view: Figs. 92, 93, lateral view: Fig. 95, dorso-lateral: Figs. 96, 97), 6.5 mm, Malaya, Borneo and Philippines (Luzon, Mindoro, Samar, Laete and Negros) appendiculatum Tsuneki, 1974
— ASR at apical area markedly narrowed apically, in dorsal view: Fig. 155, lateral: Fig. 156 (from right side), ventro-lateral: Fig. 157), 6.5 mm, Sibuyan sibuyanense sp. nov.
23 (ASR raised about as high as SAT, anterior aspect acutely edged on inner margin, in lateral view: Fig. 138, ventro-lateral: Fig. 139, 6.5 mm, Java vicinum Tsuneki, 1979)
— ASR highly raised above top of SAT 24
24 Subalar area acutely edged on outer margin, ASR in dorso-lateral view: Fig. 146,A, 6 mm, Basilan basilanense sp. nov., Basilan form
— Subalar area rather bluntly edged on outer margin, ASR in dorso-lateral view: Fig. 146,B, basilanense sp. nov., Mindanao form
25 Propodeum with lateral carinae (mesoscutum microcoriaceous, sometimes weakly so, hair silvery) 26
— Propodeum without lateral carinae ..... (none)
26 Trochanters pale yellow (hind one partly brown), R1 as long as A3 (mesoscutum half mat, IODs=2:1, A3=AW×3.5, SAT-ASR: Figs. 164-167, clypeus: Fig. 168, gaster medianly brownish beneath, fore and mid tibiae partly ferruginous), 7 mm, Palawan palawanum Tsuneki, 1976, ♀
— Trochanter black, R1 shorter than A3 27
27 Mesoscutum feebly microcoriaceous and sparsely punctured, all tarsi nearly wholly ferruginous (IODs=10:7, Al3≒A9-12, gaster black, SAT high thick nasiform, PAF deep, flat-bottomed, apical margin of clypeus rounded, area dorsalis enclosed with weak furrow), 9 mm, Mindanao kolambuganum sp. nov., ♂
— Mesoscutum distinctly microcoriaceous and very closely punctured, half-mat, at least mid and hind tarsi largely black 28
28 IODs=10: 8-9 29
— IODs=2:1 - 3:1 (SAT high acute nasiform, anteriorly transversely carinate) 30
29 G1 on basal half ferruginous, rest of gaster black, apical margin of clypeus bidentate in middle (SAT tuberiform, without transverse carina anteriorly, PAF shallow, bottom line up-curved, A3=AW×2, tarsi dark brown, apically somewhat paler), 10 mm, Luzon (nominate form: India, Malaya and Java) fletcheri baguionis ssp. nov., ♀
— Gaster completely black, apical margin of clypeus rounded, medianly somewhat angulated (SAT acute nasiform, with transverse carina anteriorly, PAF anteriorly interrupted by the canina, IODs=10:8, A3=AW×3, Al3≒Al0-12 and ≒ BW×2, fore tibia largely, mid and hind T1 at base ferruginous or whitish), 7 mm, Luzon luzonense sp. nov., ♂
30 G1 at least broadly ferruginous, mid and hind T1 at base broadly ferruginous (apical margin of clypeus recurved in middle, A3≒AW×3.5, fore tibia largely and fore T5 pale brown), 10-11 mm, Luzon and Negros luzonense sp. nov., ♀
— Gaster and all T1 black 31
31 A1 and 2 black, legs black, only fore tibia and parts of tarsus slightly brownish (HW:IODv=100:31, clypeus: Fig. 217, ASR much below top level of SAT), about 11 mm, Mindanao luzonense nigrum ssp. nov., ♀
— A1 and 2 broadly ferruginous beneath, fore and mid tibiae fairly broadly and all T5 bright ferruginous (HW:IODv=100:26, clypeus: Fig. 221, ASR raised as high as SAT), 9 mm, Negros and Mindoro scaposum sp. nov., ♀
32 Hair on head and/or thorax golden or brassy (sometimes very faintly so, nearly silky white) 33
— Hair silvery or white 42
33 Propodeum without lateral carinae 34
— Propodeum with lateral carinae 36
34 PAF shallow, borad, simply down-curved in cross section, clypeus in ♀

rounded out, at most weakly waved at apical margin (IODs=10:8, OOD:POD≒2:3, A3=AW×4, area dorsalis enclosed with feeble furrow, RC=C, CV1=CV2× 5–6, mesoscutum microcoriaceous, antenna at base yellow), 12–14 mm, Luzon, Basilan varipunctatum sp. nov., ♀

— PAF deep, flat-bottomed, U-shaped or oval in cross section, clypeus in ♀ with apical margin deeply emarginate on each side of medial protuberance, in ♂ nearly rounded out 35

35 IODs=10 : 8–9 (♂ ♀), pronotal lamina blunt triangular, less produced than in following species, hind femur with 2 brown streak on apical half (medio-apical prominence of clypeus in ♀ more strongly produced than in the following, ASR thick, bicarinate, PAF U-shaped in cross section, in ♂ A13>A10–12), 16–18 mm, Malaya, Sumatra, Java, Borneo, Palawan varipilosum Cameron, 1901

— IODs=10 : 6–7 in ♀, 10:8 in ♂, pronotal lamina narrower, more produced than in preceding species, hind femur largely or on posterior half brown or dark brown (apical margin of clypeus and ASR–PAF more or less variable, cf. Figs. 237–243 in ♀, 244–245 in ♂, 246–248 Luzon, 252–253 Samar, 254 Negros, 255–257 Mindanao, A13 in ♂ ≒ A10–12), 14–16 mm, Borneo and Philippines (Luzon, Mindoro, Sibuyan, Samar, Panay, Negros, Mindanao) varipiloides Tsuneki, 1980

36 Frons on each side of medial furrow with a markedly highly raised swelling 37

— Frons without high elevations 38

37 Frontal swellings large and rounded, IODs=10:5(♀), mesoscutum without microsculpture, shining under 50× magnification (anterior part of collar narrowly ferruginous on top, SAT moderately high rounded nasiform, ASR unicarinate at apex, as high as SAT, both ASRs almost contiguous to each other, leaving a linear IAF, PAF moderately deep, up-curved, V-shaped in cross section, clypeus rounded out, medianly shortly subtruncate, area dorsalis without lateral furrows, RC=C, CV1=CV2×4.5, (antenna lacking), gaster and legs ferruginous, the former with scattered blackish marks, the latter partly black or brown), about 16 mm, Luzon williamsi sp. nov., ♀

— Frontal swellings rather smaller, subconical, acutely narrowed towards top, IODs=10:8 (♀), 10:9 (♂), mesoscutum distinctly microcoriaceous (anterior part of collar completely black, SAT moderately high long nasiform, apical margin not carinated but at verge to PAF edged, ASR much below top of SAT, bicarinate, PAF shallow, U-shaped in cross section, clypeus rounded out, medio-apical area thin and impressed in middle, area dorsalis with weak lateral furrows, A3=AW×5 in ♀, ×2.7 in ♂, A13=A10–12, gaster and legs ferruginous, the former with black marks geographically variable, the latter partly black or brown), ♀ 14–18, mostly 17–18 mm, ♂ 13 mm , Samar, Panay, Negros, Mindanao and Basilan varicolor sp. nov.

38 Mesoscutum microcoriaceous (sometimes weak) and superimposed with punctures (anterior part of collar black, SAT low broad nasiform, apical margin transversely highly carinate and laterally covering posterior part of ASR, the carina medianly depressed, IODs=10:9, A3=AW × 4–4.5, antenna basally, gaster and legs both largely ferruginous, propodeum closely punctured, not well-shining), 11 mm, Malaya, Java, Borneo and Philippines (Luzon, Samar, Negros, Mindanao, Tawitawi, Palawan) rufiventre Tsuneki, 1976

— Mesoscutum without microsculpture, simply punctured 39

39 Anterior part of collar black, Gl very slender and long, appr. as long as AW×10 (antenna completely and legs broadly black, gaster black and medianly reddish, area dorsalis enclosed with fine furrow, IODs=10:9, clypeus at medio-apical margin obtusely bidentate, SAT low broad tuberiform, with short acute median carina, ASR broadly expanded anteriorly, PAF up-curved, wide V-shaped in cross section, RC=C, CV1=CV2×4), about 11 mm, North Borneo and Tawitawi, Basilan auropilosum Tsuneki, 1976, ♀

— Anterior part of collar yellow, at least on top area, Gl not so slender and long 40

40 Anterior part of collar only on top area narrowly yellowish (antenna basally and legs broadly yellowish, gaster ferruginous, often posteriorly brownish, Gl with a small brown mark on apical swelling, IODs=10:8, A3=AW×5, SAT moderately high nasiform, medio-apically with a flat shining area, ASR as high as SAT, bicarinate, PAF deep, flat-bottomed, U-shaped in cross section, clypeus: Fig. 299), 10 mm, Luzon and Mindanao taros sp. nov., ♀

— Collar completely yellow 41

41 Apical margin of SAT transversely carinate – Fig. 307–310 (IODs=10:9 in

♀, 10:8.5 in ♂, A3=AW×3.5 in ♀, ×2 in ♂, A13÷A8–12, gaster and legs ferruginous, G1 apically, G2,3,4 before apex black or brown, mid and hind legs partly brown , ♀ 11, ♂ 9 mm, Luzon luteocollare sp. nov.

— Apical margin of SAT obliquely smoothly inclined to IAA (IODs=10:10 in ♀, 10:8 in ♂, A3=AW×4 in ♀, ×2.3 in ♂, A13÷A8–12 or slightly longer, gaster yellow and black maculated, G1 except base and sides black, PAF shallow, up-curved, V-shaped in cross section, RC=C, CV1=CV2×7), ♀ 15–16 mm, ♂ 11–14 mm, India, Laos, Malaya, Sumatra, Borneo and Philippines (Luzon, Negros and Mindanao) fulvocollare Cameron, 1904

42 Propodeum without lateral carinae 43

— Propodeum with lateral carinae 56

43 Mesoscutum microcoriaceous (under 30× well defined) and superimposed with punctures 44

— Mesoscutum without microsculpture, simply punctured 47

44 At least G1 and 2 ferruginous (from G3 apically lacking), marked with brown above, PAF deep, U-shaped in cross section (IODs= 4:3, frons flat, SAT low tuberiform, surface nearly flat, apical margin transverse, bluntly edged, median carina short, highly raised, ASR highly bicarinate, clypeus: Fig. 323, A3=AW×4, area dorsalis with weak lateral furrows, weakly rugoso-punctate, antenna and legs dark brown, legs partly pale), possibly 11–12 mm, Luzon cidicum sp. nov., ♀

— At least G1 black, PAF shallow, broad, V-shaped in cross section, bottom line up-curved (fore and mid tarsi largely white) 45

45 Area dorsalis on propodeum largely smooth and shining and sparsely punctured, medio-apical part of clypeus gently emarginate, not bevelled (hind T1–4 white, G2–3 ferruginous and marked with black above), about 10 mm, Luzon lagunaense sp. nov., ♀

— Area dorsalis mainly transversely finely closely striate all over, medio-apical part of clypeus slightly produced and roundly bevelled anteriorly ... 46

46 Hind tarsus black, gaster usually with G2 and 3 at least on sides and underside ferruginous (sometimes microsculpture on mesoscutum very feeble, SAT moderately high nasiform, obliquely smoothly inclined to IAA, ASR much below top level of SAT, A3=AW×4.5, area dorsalis enclosed with broad shallow furrow, hind spurs dark brown), about 11 mm, Laos, Singapore, Sumatra, Java, Borneo and widely in the Philippines striolatum Tsuneki, 1979, ♀

— Hind tarsus at least T1–3 or 1–4 white, gaster black (otherwise similar to striolatum), 12 mm, Negros canlaon sp. nov., ♀

47 Frontal elevations on both sides of medial furrow markedly high, nearly hemispherical, usually top area fairly glossy (clypeus rounded out, often apically subtruncate, SAT high long nasiform, acutely carinated in middle, lateral inclinations oblique, ASR much below top level of SAT, surface with 3–4 carinae, PAF shallow, but bottom line flat and at apex suddenly ending high above level of scapal hollow, IODs=10:8 in ♀♂, A13 slightly shorter than A9–12, area dorsalis without lateral furrows, antenna black, in ♀ ferruginous beneath, fore and mid tibiae largely pale brown, fore tarsus and parts of mid tarsus whitish, gaster mainly on G2 and 3 red, usually black maculated above, mesoscutum finely, somewhat sparsely punctured), ♀ 15–20, ♂ 11–14 mm, Luzon, Samar, Sibuyan, Negros and Mindanao ashmeadi Baltazar, 1966

— Frontal elevations not so high, not so conspicuous 48

48 PAF shallow, up-curved (gaster at least partly red) 49

— PAF deep, flat-bottomed or nearly 51

49 Large form, 17–18 mm, gaster from apical swelling of G1 to G4 largely red (fore tibia and tarsus, mid tibia in front broadly, mid tarsus, hind tibia at base and spurs light ferruginous, antenna dark brown, paler beneath, IODs=10:8–8.5, clypeus with apical margin broadly subtruncate, mesoscutum finely, somewhat sparsely punctured, area dorsalis enclosed with broad shallow indistinct furrow, pronotal lamina not toothed, but triangularly produced, RC=B, but close to C), Palawan bicolor Smith s. str., var., ♀

— Smaller, 10–15 mm, gaster not so broadly red 50

50 Antennal flagellum black and pale brown beneath, area dorsalis smooth, often partly transversely striate, clypeus rounded out, apical margin usually broadly subtruncate, punctures on mesoscutum very fine and sparse, with surface shining (gaster from apex of G1 to G3, at most to base of G4 red, usually black maculated above, fore tibia largely, fore tarsus, mid

tibia at base and apex, mid T1-2, or -3, or -4, hind tibia at base and all tibial spurs pale ferruginous, IODs=10:8, lateral furrows of area dorsalis usually indistinct), 13-15 mm, widely spread over Oriental Region and eastern Palaearctic Region, in Philipppine: Basilan, Mindanao, Palawan, Busuanga and Basbas petiolatum Smith, 1857, ♀

— Antenna completely black, area dorsalis distinctly transversely closely striate, clypeus rounded out, medio-apical area incrassate, slightly produced, anteriorly bevelled and gently emarginate, punctures on mesoscutum larger, more distinct, under high magnification feeble microsculpture defined, surface not shining (gaster from apical area of G1 to G4 beneath red, fore tibia and tarsus, base and apex of mid tibia and mid T1-3 or -4, base of hind tibia and tibial spurs pale ferruginous, IODs=10:7.5, lateral furrows of area dorsalis weak or absent), 11-12 mm, see couplet 46) striolatum Tsuneki, 1979, ♀, var.

51 Gaster completely black (IODs=10: 7.5-8, frontal elevations fairly high, SAT wide rounded nasiform, close to tuberiform, fairly high, clypeus with apical margin rounded, often weakly emarginate in middle, A3=AW×5 (♀) ×2.5 (♂), Al3≒A9-12, pronotal lamina triangular, apex somewhat toothed, propodeum in ♂ often with feeble lateral carinae, area dorsalis with weak lateral furrows, RC=B-C, CV1=CV2×7-8, punctures on mesoscutum fine, somewhat sparse, but distinct, fore tibia in front partly, fore tarsus, base of mid and hind tibiae, all spurs and often mid T1 ferruginous, mid T2-5 brown), 13-17 mm, Samar, Mindoro, Mindanao and Basilan samarense sp. nov.

— Gaster wholly or partly red 52

52 Gaster from apex of G1 till apex ferruginous, often posterior part brownish (median carina of SAT anteriorly enlarged and obliquely inclined into flat shining area, clypeus on each side of medio-apical prominence excavated, hair on clypeus variable from golden - brassy - silky white, see also couplet 35), ♀ 13-18, ♂ 10-13 mm varipilosum Cameron, 1901

— Gaster only medianly red, posterior part distinctly black (SAT without obliquely inclined flat and shining area in front, apical margin of clypeus different) 53

53 ♀ (IODs=10:7, antennal flagellum completely black, apical margin of clypeus medianly feebly incised, fore tibia and tarsus, mid tibia at base and apex, mid T1-2, hind tibia at base, all spurs light ferruginous, G1 black, G2 on sides and beneath of apical area, G3 on sides and beneath and G4 at base beneath dusky red, area dorsalis with weak lateral furrows and transversely closely striate as in striolatum), about 11 mm, Mindanao sarum sp. nov.

— ♂ 54

54 Al3≒A8-12, at least >A9-12, gaster from apical swelling of G1 to G4 red, not black maculated above (RC=B, but close to C, clypeus with apical margin medianly incrassate, shining and subtruncate, lateral furrows of area dorsalis not strong, IODs=10:8, A3=AW×2.5, pronotal lamina triangular, apex minutely rounded, fore tibia at base in front and apical spur ferruginous, tarsi brown to dark brown), 12 mm, Palawan bicolor Smith s. str., var., ♂

— Al3 at most as long as A9-12, red part of gaster narrower and always black maculated above 55

55 Lateral furrows of area dorsalis indistinct (the area sparsely punctured, often posteriorly transversely striate), 11-12 mm, distribution: see couplet 50 petiolatum Smith, 1857, ♂

— Lateral furrows of area dorsalis deep, fine, very distinct (propodeum smooth and shining, area dorsalis weakly transversely striate and on anterior part mixed with punctures, mesoscutum smooth and polished, very finely, very sparsely punctured, with parapsidal sutures markedly deep), 11 mm, Mindanao petiolatum Smith, 1857, aberratio, ♂

56 Mesoscutum under 20× magnification with microsculpture defined and superimposed with punctures 57

— Mesoscutum under 20× magnification without microsculpture defined, simply punctured 74

57 SAT nasiform, apical margin transversely carinated, carina connected with ASR, separating PAF from IAA (see also couplets 29 and 30) luzonense sp. nov.

— PAF not interrupted with the carina 58

58 Subalar area of mesopleuron with well-developed pent-roof structure 59

— Subalar area without pent-roof structure, if outer margin acutely carinated, not broadly expanded to cover subalar pit 61

59 Gaster medianly ferruginous (all tarsi white except brown T5, clypeus: Figs. 373 (♀), 364 (♂), IODs=10:9 (♀ ♂), A3÷AWx5.3 (♀), x3.3 (♂), ♀ 12-15, ♂ 11-12 mm, Luzon *compluvium* sp. nov.

— Gaster black, often medianly brown beneath 60

60 Tarsi except part of all T1 black (G2-3 brown beneath), 16 mm, Mindoro *compluvium mindoronis* ssp. nov., ♀

— All tarsi white (gaster completely black), 14 mm, Panay *compluvium panayanum* ssp. nov., ♀

— Tarsi white, but hind T1 partly black (IODs=10:9 in ♀, 10:8-9 in ♂, A3=AWx5 in ♀, x3 in ♂, A13÷A9-12, ASR bicarinate on top), ♀ 12, ♂ 9-11 mm, Samar *compluvium samarianum* ssp. nov., ♀♂

61 Fore tarsus at least largely white 62

— All tarsi black, at most partly brown (IODs=10:8 - 10:10) 71

62 Hind tarsus at least largely white 63

— Hind tarsus at least largely black 69

63 IODs=2:1 (apical margin of clypeus medianly weakly incised) 64

— IODs=10:7 - 10:10 65

64 Gaster black (mesoscutum with microsculpture comparatively weak and punctures fine, hind carina of ASR strongly reflected, SAT-ASR: Figs. 376-377, clypeus: Fig. 378, hind T1 usually largely black, sometimes completely white) 11-15 mm, Tawitawi, Mindanao, Negros, Panay, Samar, Mindoro *insulare* Tsuneki, 1976, ♀

— Gaster medianly red, with black marks above (microsculpture and punctuation of mesoscutum comparatively stronger, hind carina of ASR not reflected, hind T1 largely black), 13-14 mm, Luzon *insulare rufomaculatum* ssp. nov.

65 Gaster medianly red and marked with black above (hind T1 largely black) 66

— Gaster black 68

66 Clypeus at base with hair strongly curved inwards, at apex markedly reflexed, medio-apical area produced, incrassate and roundly bevelled anteriorly (area dorsalis transversely finely closely striate), 10-13 mm, Luzon, Samar *rohweriellum* sp. nov., ♀

— Clypeus at base with hair nearly parallel, at apex gently reflected, medio-apical area not incrassate, not bevelled (area dorsalis longitudinally shallowly rugoso-punctate), Luzon *banahao* sp. nov. .. 67

67 ♀ 14 mm, clypeus: Fig. 396, IODs=10:9, A3÷AWx4, SAT-ASR: Figs. 392-395.

— ♂ 11 mm, clypeus: Fig. 401, weakly incised in middle, IODs=10:9, A3=AWx3, A13÷A10-12.

68 Subalar area with half-developed pent-roof structure (outer marginal edge somewhat produced over subalar pit, pit wall flat, A13÷A9-12, area dorsalis rugoso-punctate, SAT tuberiform), 12 mm, Panay *semicompluvium* sp. nov., ♂

— Subalar area normal (outer margin only posteriorly edged, not produced, pit wall not flat, A13 > A10-12, but < A9-12, area dorsalis transversely finely closely, but feebly striate, mixed with sparse weak punctures, SAT nasiform), 9 mm, Tawitawi, Mindanao, Negros, Samar, Mindoro *insulare* Tsuneki, 1976, ♂

69 A3÷AWx3, mid T2-5 black (SAT tuberiform, top area broadly flattened, clypeus: Fig. 421, IODs=10:6, disc of area dorsalis on median part without striae, sparsely punctured, gaster medianly brown beneath), about 10 mm, Is. Basilan *basilanum* sp. nov., ♀

— A3 ≥ AWx4, mid tarsus largely whitish (SAT nasiform) 70

70 Area dorsalis transversely finely closely striate all over, medio-apical part of clypeus incrassate, roundly bevelled anteriorly, PAF shallow or moderately deep, always up-curved, IODs=10:8, A3÷AWx5, gaster usually medianly reddish and marked with black above, see also couplet 46), 12-13 mm *striolatum* Tsuneki, 1979, ♀

— Area dorsalis on median part of disc sparsely punctured, medio-apical part of clypeus not incrassate, slightly depressed in middle - Fig. 426 (PAF deep, flat-bottomed, IODs=10:7, A3÷AWx4, gaster lacking), head+thorax-complex=4 mm (similar to *striolatum* ♀), Mindanao *rekabum* sp. nov., ♀

71 SAT broadly flattened, apical margin edged, verge to PAF markedly reflected, produced over PAF, apical margin of clypeus medianly narrowly produced (pronotal lamina somewhat toothed, furrows of area dorsalis striate, G2-3 ferruginous, marked with black above), 11 mm, Laos and Philippines (Mindanao and Luzon) *lobatifrons* Tsuneki, 1979, ♀

— SAT different, medial protuberance of clypeus, if present, broader 72

72 SAT thick high nasiform, highly raised above ASR, PAF comparatively shallow, V-shaped in cross section and distinctly up-curved (clypeus: Fig. 432, medio-apical produced part incrassate, area dorsalis transversely striate all over, gaster black), 13 mm, Mindanao bukidnon sp. nov., ♀

— SAT tuberiform or flattened, not markedly raised high above ASR, PAF deep, U-shaped, flat-bottomed 73

73 ASR with a hollow on posterior wall, SAT in vertical view comparatively small triangle in outline, apically margined with raised carina, surface flattened and medianly carinate (clypeus: Figs. 439 in ♀, 440 in ♂, A13 slightly less than as long as A10-12, gaster in ♀ completely black, in some islands medianly red and black marked above, in ♂ always black, at most medianly brownish beneath), 8-10 mm, Mindanao, Basilan, Busuanga, Luzon (Borneo, Java, Singapore) mindanaonis Tsuneki, 1976

— ASR without a hollow on posterior wall, SAT large round tuberiform, medianly carinate, apical margin outcurved in vertical view, bluntly edged at verge to PAF, but not carinate there (clypeus: Fig. 456, gaster medianly reddish or brownish beneath, tarsi apically pale brown), 12-13 mm, Luzon apicum sp. nov., ♀

74 Frons with two highly raised tubercles and ocellar area also highly tuberculate, the tubercles usually smooth and shining, with scattered punctures (antenna, gaster and legs black, IODs=10:8 (♀ ♂), apical margin of clypeus medianly produced, produced part often gently emarginate, SAT high nasiform, dorsal line in lateral view strongly curved, ASR much below top level of SAT, PAF wide V-shaped in cross section, lamina of pronotum triangular, apex somewhat toothed, propodeum with lateral carinae, area dorsalis enclosed with strong furrow, transversely coarsely striate, RC=M, CV1=CV2×5, A3=AW×4 in ♀, ×2.7 in ♂, A13≒A11-12 or slightly longer), ♀ 10-13, ♂ 9-10 mm, Luzon, Panay, Biliran trituberculatum sp. nov.

— Head not trituberculate 75

75 Subalar area with pent-roof structure (gaster black, tarsi whitish except T1, IODs=10:9, lateral furrows of area dorsalis distinct, SAT high thick nasiform, PAF deep, flat-bottomed, A13≒A9-12, R1 reaching close to wing apex), 11 mm, Mindanao curvum sp. nov., ♂

— Subalar area without pent-roof structure 76

76 All trochanters whitish, often weakly brownish above 77

— All trochanters black, sometimes partly ferruginous 78

77 Apical margin of clypeus rounded and weakly trisinuate, median sinus feeble, mid tarsus from apex of T1 apically black (ASR as high as SAT, IODs=10:4, A1 wholly ferruginous, gaster black, only on median area brown beneath), about 10 mm, Balabac balabacense Tsuneki, 1976, ♀

— Apical margin of clypeus rounded and medianly recurved, mid tarsus whitish, only on T5 brown above (ASR somewhat below top level of SAT, IODs=2:1 in ♀, 3:2 in ♂, A1 black and ferruginous beneath, gaster medianly ferruginous red and marked with black above, in ♂ A13≒A8-12, parallel-sided and rounded at apex), 8-12 mm, widely distributed over Oriental Region errans Saussure, 1867

78 All legs black, only partly brown (IODs=10:8, SAT moderately high and rounded nasiform, nearly tuberiform, PAF fairly deep, but bottom line upcurved, clypeus with apical margin rounded, A13≒A9-12, lateral carina of propodeum very feeble, area dorsalis enclosed with weak furrow, surface finely sparsely punctured - gaster lacking), possibly 12-13 mm, Basilan samarense sp. nov., ♂

— At least fore tarsus largely whitish or ferruginous or pale brown 79

79 Hind tarsus at least largely black 80

— Hind tarsus at least largely white 83

80 Gaster completely black (IODs=4:3, SAT tuberiform, PAF deep, flat-bottomed, clypeus simply rounded out, lateral carinae of propodeum feeble, lateral furrows of area dorsalis also feeble, disc finely punctured, RC=C, mid tarsus brownish white, apically darker), about 16 mm, Mindoro halcon sp. nov., ♀

— Gaster medianly more or less reddish 81

81 ♀. Mid tarsus from apex of T1 apically black, SAT tuberiform, medianly thickly carinate, apical margin roundly edged (IODs=10:8, clypeus: Fig. 488, A3=AW×4, area dorsalis with weak lateral furrows, disc feebly closely punctured, RC=C, but close to M, CV1=CV2×6), 11 mm, Tawitawi and Basbas tawitawiense Tsuneki, 1976, ♀

— ♂ 82

82 Al3 shorter than A9–12, mid tarsus from apex of T1 apically black, SAT tuberiform, top area nearly flattened and carinated in middle, apical margin roundly edged (IODs=5:4, A3=AWx3.3, area dorsalis enclosed with shallow striated furrow, disc posteriorly striate and anteriorly sparsely punctured, RC=C, CV1≒CV2x5), 9–10 mm, Tawitawi and Basbas
tawitawiense Tsuneki, 1976, ♂

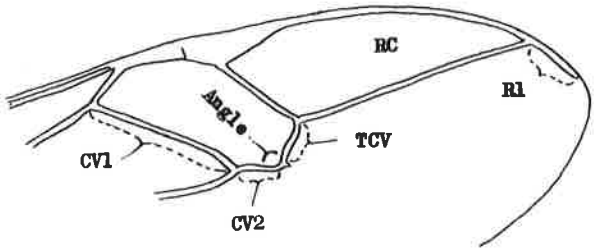
— Al3 longer than A8–12, mid tarsus largely whitish, SAT moderately high nasiform, apical margin not edged (IODs=3:2, A3=AWx2.7, area dorsalis enclosed with deep crenate furrow, disc strongly, fairly closely punctured, RC=B, somewhat close to C, CV1=CV2x3–4), 9–10 mm, widely spread over the Oriental Region, in the Philippines known from Luzon, Negros and Leyte
errans Saussure, 1867, ♂

83 Gaster black (fore and mid tarsi brown or dark brown, apically paler, hind tarsus except dusky T1 whitish, IODs= 10:9 (♀ ♂), SAT low broad nasiform, PAF shallow, simply down-curved in cross section, A3=AWx4.5 (♀),x2.5 (♂), Al3>A9–12, lateral furrows of area dorsalis feeble), ♀ 17–20, ♂ 14–15 mm, Luzon, Samar, Panay, Mindanao
giganteum sp. nov.

— Gaster medianly ferruginous red and black maculated above (area dorsalis enclosed with deep distinct furrow, fore and mid tarsi nearly wholly whitish) 84

84 Hind T1 largely black above, clypeus: Fig. 497 (PAF simply down-curved in cross section, IODs=10:8.5, A3=AWx3.7), 10–11 mm, Luzon
licinum sp. nov., ♀

— Hind T1 white, clypeus: Fig. 502 (PAF moderately deep, V-shaped in cross section, IODs=10:7, A3=AWx5), 11–12 mm, Luzon
banosense sp. nov., ♀



A figure to show the named parts of veins of fore wing.

DESCRIPTIONS AND RECORDS OF THE SPECIES

1. TRYPOXYLON SCHMIEDEKNECHTI KOHL, 1906

Trypoxylon schmiedeknechti Kohl, Denks. Math.-Naturw. Kl. k. Akad. Wiss., 71: 34, 1906 (♂, Java).
Trypoxylon schmiedeknechti: Tsuneki, SPJHA, 7: 21, 1978 (with references).

Distribution hitherto known: (Nominate race) India, Nepal, Ceylon, Thailand, Cambodia, Viet-Nam, Laos, South China (Hainan I., Macao, Hongkong, Ningpo), Malaya, Singapore, Sumatra, Java, Bangka I., Sumba I., Borneo, Formosa and Philippines (Mindanao Palawan, Busuanga, Culion, Samar, Mindoro and Luzon).

Specimens newly examined: Luzon, 11 ♀ 25 ♂: Mt. Makiling, 3 ♀ 1 ♂, 29. III. 1978, T. Tano (2 ♀ 1 ♂), T. Murota (1 ♀). Naguilion near Baguio, 1 ♂, 28. III. 1978 T. Tano. Los Banos, 4 ♀ 6 ♂, 31. III. 1978, T. Tano (1 ♂), T. Murota (2 ♀ 2 ♂), H. Kurokawa (2 ♀); 2-5. VIII. 1978, T. Murota (3 ♂). Hidden Valley Spring, 1 ♀, 3-4. IV. 1978, T. Murota. Pagsanjan, 1 ♀ 6 ♂, 1. IV. 1978, T. Murota (1 ♂); 7-9. VIII. 1978, H. Kurokawa (3 ♂), T. Murota (1 ♀ 2 ♂). Near Bontoc (Mountain Prov.), 1000 m, 1 ♀, 31. XII. 1978, T. Murota. Naga (Calabanga or in City), 1 ♀ 6 ♂, 14-15. VIII. 1978, T. Murota. Baao, 1 ♂, 16. VIII. 1978, T. Murota. Manito, 2 ♂, 18. VIII. 1978. Tabaco, 3 ♂, 19. VIII. 1978.
Negros, 2 ♀ 6 ♂: Mambucal, 1 ♀ 6 ♂, 2-3. IV. 1979, H. Kurokawa (1 ♀ 4 ♂), T. Tano (2 ♂). Taytay beach, 1 ♀, 4-5. IV. 1979, H. Kurokawa.
Cebu, 2 ♀ 6 ♂: Mactan Is. 1 ♀ 4 ♂, 28. III. 1979, C. Nozaka (1 ♀ 2 ♂), H. Kurokawa (1 ♂), T. Tano (1 ♂). Danao, 1 ♀ 1 ♂, 29. III. 1979, H. Kurokawa. Cantabaco, 1 ♂, 30. III. 1979, T. Tano. Leyte. 1 ♂, Tacloban, 12. VIII. 1952, H. Townes (AEI)

2. TRYPOXYLON THAIANUM PHILIPPINICUM TSUNEKI, 1978

Trypoxylon thaianum philippinicum Tsuneki, SPJHA, 7: 62, 1978 (♀ ♂, Philippines: Luzon Culion, Samar, Negros, Busuanga, Palawan, Balabac, Tawitawi).

Distribution of T. thaianum s. l.: South India, Ceylon, Thailand, Laos, Malaya, Sumatra, Java, Sumba, Ambon, Borneo, North China, Philippines, Ryukyus.

Specimens newly examined: Luzon, 48 ♀ 52 ♂: Mt. Makiling, 2 ♀, 29. III. 1978 T. Tano. Naguilion near Baguio (Launion Prov.), 1 ♂, 27. XII. 1978, T. Murota. Los Banos, 4 ♀ 38 ♂, 31. III. 1978, T. Tano (1 ♀ 1 ♂), T. Murota (1 ♀ 5 ♂), 2-5. VIII. 1979, T. Murota (2 ♀ 20 ♂), H. Kurokawa (12 ♂). Hidden Valley Spring, Alaminos, 3-4. IV. 1978, T. Tano (2 ♂), T. Murota (31 ♀). Lake Bato (Prov. Camarinessur), 1♀♀, 16. VIII. 1978, T. Murota. Pagsanjan, 2. IV. 1978, T. Tano (1 ♂), T. Murota (1 ♀ 1 ♂); 7-9. VIII. 1978, T. Murota (5 ♂), H. Kurokawa (5 ♂). Naga, 2 ♂, 14. VIII. 1978, T. Murota.
Negros, 7 ♀ 5 ♂: Manbucal, 7 ♀ 5 ♂, 2-3. IV. 1979, T. Tano (3 ♀ 3 ♂), H. Kurokawa (4 ♀ 2 ♂).
B t g. (?), Tagaytay, 1 ♀, 20. VII. 1952, Townes family (AEI)*.

3. TRYPOXYLON BAKERI TSUNEKI, 1978

Trypoxylon bakeri Tsuneki, SPJHA, 7: 66, 1978 (♀, Philippines: Mindanao, Negros, Samar and Luzon)

Specimens newly examined: Luzon: Los Banos, 1 ♀, 30. V. 1954, H. & M. Townes (AEI); 2 ♀ 1 ♂, 31. III. 1978, in village, T. Tano. Asin Spa, 600 m (16 km from Baguio), 1 ♀ 1 ♂, 5. I. 1980, T. Murota. Negros: Mambucal, 1 ♂, 2-3. IV. 1979, C. Nozaka.

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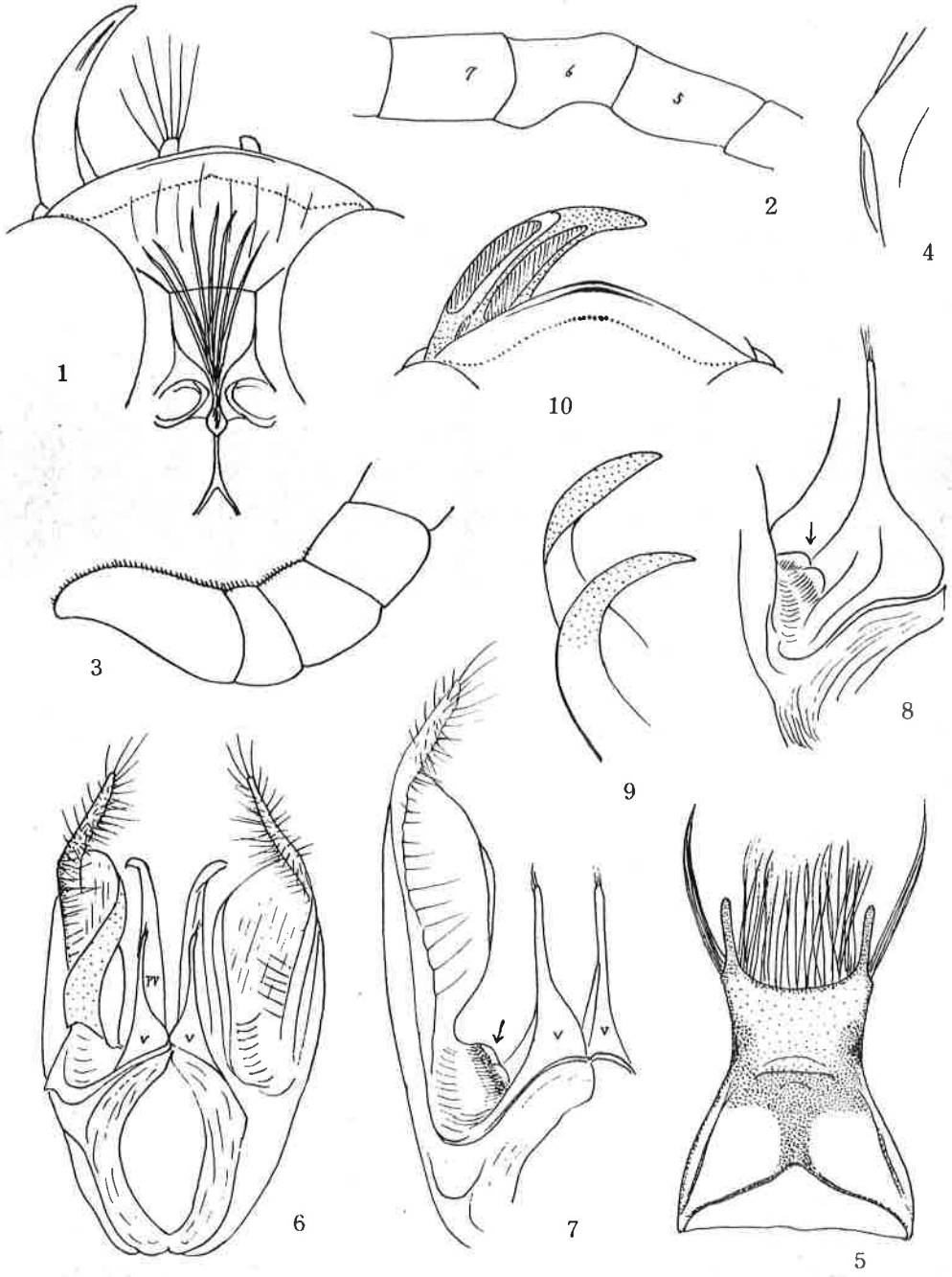
* AEI ... American Entomological Institute, Ann Arbor, Michigan.

Description of ♂, hitherto unknown. Generally similar to ♀ except sexual characters. Clypeus less strongly produced anteriorly, with apical margin more rounded (Fig. 1, cf. Fig. 10 in ♀); antennal joints except A13 shorter (see measurements) and A6 and A13 modified: A6 excavated at base beneath and produced at apex (Fig. 2), A13 appr. as long as A10–12, attenuate apically and distinctly curved (Fig. 3). Pronotal lamina (Fig. 4) and venation similar to those of ♀, 8th sternite: Fig. 5, latero-api-



Figs. 1–10. Trypoxylon bakeri Tsuneki. 1–9, ♂; 10, ♀

cal protuberances markedly slender and long. Genitalia seen from beneath: Fig. 6, paramere simply elongated at apex, there covered with stiff hair, inner margin of main body expanded and rolled, but the expansion not thin and lamellate, but softly thickened on ventral surface, volsella (V in Figs. 6, 7, 8) slender and long on apical half, the appendage between base of inner margin of paramere and volsella (shown with arrow in Figs. 7 and 8) not highly raised, but rounded bituberculate ridge, penis valve (PV in Fig. 6) simple at apex (Fig. 9, latero-dorsal view).

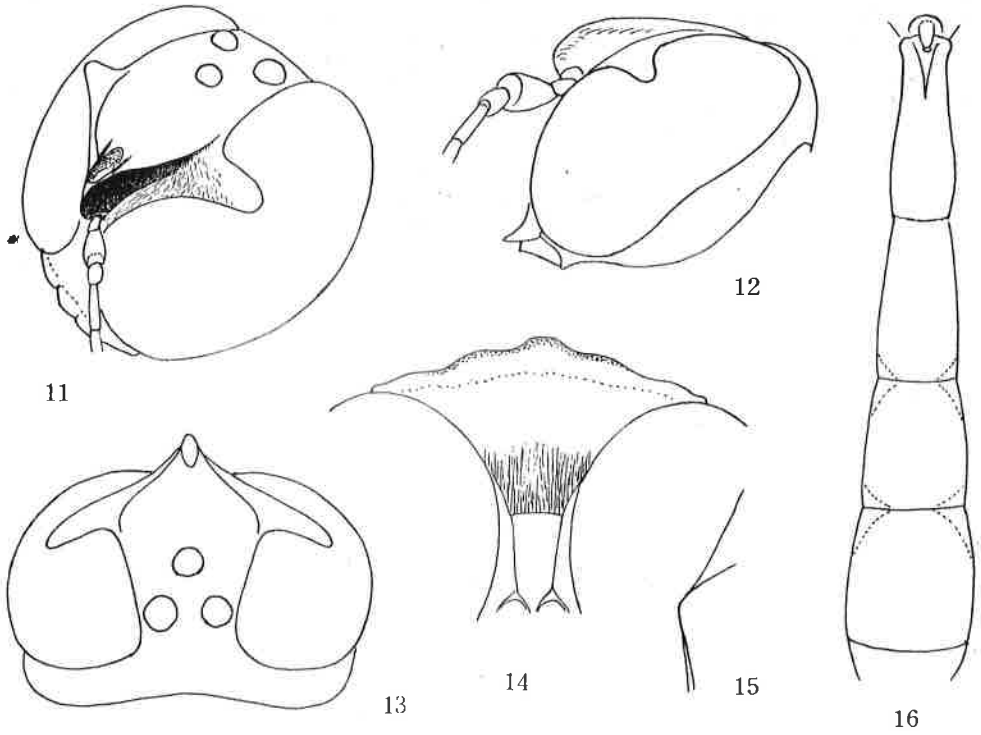
Measurements (within parentheses ♀):

HW,HL,IODv,A3,A13,P=100,50,31,14,17,117 (100,50,28,18,—,162). IODs=10:6 (do.). OOD,Od,POD=3,3,4 (3,4,5). A3=AW 2 (3). A13=BW 2. A3,4,5=10,8,8 (10,7,6.5). P,Ma, Mi,2(Ma),3(Ma)=100,21,6,50(21),50(28) (100,21,7,50(22),50(30)).

4. TRYPOXYLON TOWNESORUM SP. NOV.

Diagnosis. ♀, about 6.5 mm. Black, antenna basally, fore and mid legs largely, hind leg and gaster both partly yellow, frons at supraantennal area with highly raised V-shaped carinae (Fig. 11), Gl thick and robust (Fig. 16), mesoscutum microcoriaceous and finely closely punctured, but surface not mat, mesopleuron normal, propodeum with lateral carinae, area dorsalis enclosed with furrow.

Supplement. Supraantennal structure similar in pattern to that of T. naviforme, but shorter, not reaching mid point of the distance to fore ocellus, seen obliquely from above and side: Fig. 11, in profile: Fig. 12.



Figs. 11-16. Trypoxylon townesorum sp. nov., ♀

Yellow are A1 (basal condyle pale brown), A2 except a brown band across middle above, A3 at base and beneath, A4 and 5 each at base narrowly, clypeus at apical area (somewhat brownish), mandible (apically brown), mouth parts, pronotal tubercle largely, tegula (transparent) (basal ligaments of wings white), intersegmental areas of Gl -2-3-4 narrowly (at above almost disappeared and at sides enlarged into reddish yel-

low patches), fore leg from middle of coxa till T5 (arolium black) except brown mark on femur above, mid leg from middle of coxa till T1 except greater part of femur, and following parts of hind leg: apex of coxa, trochanter wholly, apices of femur, tibia and T1 narrowly and base broadly of tibia; rest of mid tarsus brown and paler on T4 and 5. Hair silvery, on clypeus parallel, dense on clypeus and posterior inclination of propodeum.

Head seen in front W:L=100:90, eye incision comparatively broad, subparallel-sided, with sinus broadly rounded, dorsal margin horizontal; head seen from above: Fig. 13, surface of frons except V-shaped hollow flat. HW,HL,IODv,A3,P=100,65,27,19, 90. OOD,Od,POD=1,12,6. IODs=10:3.5. A3≒AWx3, A9 thickest, about twice as thick as A3 at base, thence slightly narrowed towards ultimate joint which is attenuate at apical half. Clypeus: Fig. 14, surface nearly flat, apical reflection very weak. Pronotum transverse, anterior part narrow, almost not incrassate laterally, posterior part incompletely discoloured, in some light appears ambur-yellowish, lamina on side triangularly, not strongly produced (Fig. 15), mesopleural scrobe large and deep, subalar area not edged at outer margin, lateral carinae of propodeum long, distinct, in lateral view curved, with apex not directing towards lateral carina of area apicalis, but towards hind coxal base, area apicalis incomplete, lateral carinae not curved inwards, GSR weakly roundly elevated, area dorsalis distinctly enclosed with fine crenate furrow, medial furrow broad and deep and shallowed apically. G1-4: Fig. 16. In fore wing RC=B, R1 moderately long, only slightly shorter than CV2 and ending far before reaching wing apex, CV1≒CV2x3.5, TCV:CV2≒5:4, angle very obtuse, about 140°.

Vertex smooth, frons microcoriaceous and closely superimposed with comparatively large but shallow punctures, PIS PD, within V-shaped hollow surface smooth but not shining. Mesoscutum finely closely punctured, under high magnification punctures contiguous to each other, forming a fine net-work; area dorsalis at base obliquely, on the remaining areas transversely strongly striate, striae on posterior part of medial furrow weak and indistinct; sides smooth and polished, anteriorly finely closely striate and posteriorly closely covered with fine hair-bearing punctures.

♂, unknown.

Holotype: ♀, Near Kias, Mountain Prov., Luzon, 24. XI. 1953, Townes family (AEI).

ON TRYPOXYLON BUDDHA CAMERON, 1889
and a closely resembling different species

Trypoxylon buddha was described with a female specimen from India (Barrackpore). In 1974, before the confirmation of the detailed characters of this species, I described Trypoxylon monstruosum with two male specimens from Thailand that have similar structure of frons to that of buddha, but that have very strange antenna and fore leg. During the early part of the present study I revised the holotype of buddha and could combine monstruosum with this species as its different sex and at the same time could confirm the occurrence of the species in the wide range of India, Ceylon, Burma, Malaya, Thailand, Laos and Is. Tawitawi of the Philippines. Since then T. buddha has been believed to be one of the species that can easily be identified from others by its characteristic structure and/or sculpture of the frons, clypeus, mesoscutum, propodeum and gaster.

However, during the study of the present Part I happened to find that there were two different species among the Philippine male specimens of apparent buddha, both of which run straight to this species according to the keys of previous Parts.

One of them is a form represented by the so-called monstruosum and the other is a provisionally newly named form, propinquum. (The reason that the name of buddha ♂ is not used is that which of the two is the true male of buddha is at this stage yet undetermined).

Externally the differences between the two species appear in the form and colour of the antenna, structure of supraantennal area and fore metatarsus and somewhat also in the colour of hind tibia and in the relative length of CV1 and CV2 of fore wing. Internally they differ markedly from each other in the structure of the genital organs and the 8th sternite. In the following the detailed comparison of the two species (♂) is tried using conveniently the names above given:

Basal part of antenna in monstruosum: Figs. 17 (right, frontal, broadest view), 18 (right, A2-6, frontal, somewhat from outer side), 19 (right, A2-7, frontal and ventral view), 20 (left, dorsal); in propinquum: Figs. 32 (right, frontal broadest view), 33 (right, frontal and ventral).

In monstruosum A1 thicker and more broadly whitish (Fig. 17, cf. Fig. 32, less thick, black in front and ferruginous behind), A4 more broadly expanded (lamellate) and more broadly and distinctly white (Figs. 17, 18, cf. Fig. 32, here less broad, less distinctly ferruginous), A5 broadly excavated beneath, nearly lamellate, broader and shorter (Figs. 18, 19, 20, cf. Figs. 32, 33, here A5 less strongly excavated beneath (only at base) and narrower and longer). Apical part of antenna in monstruosum: Fig. 21, in propinquum: Fig. 34. A13 in the former longer than A11+12 (Table 3) and with a weak oblique ridge, while in the latter slightly shorter than A11+12 and without ridge, further, here A11 and 12 relatively longer.

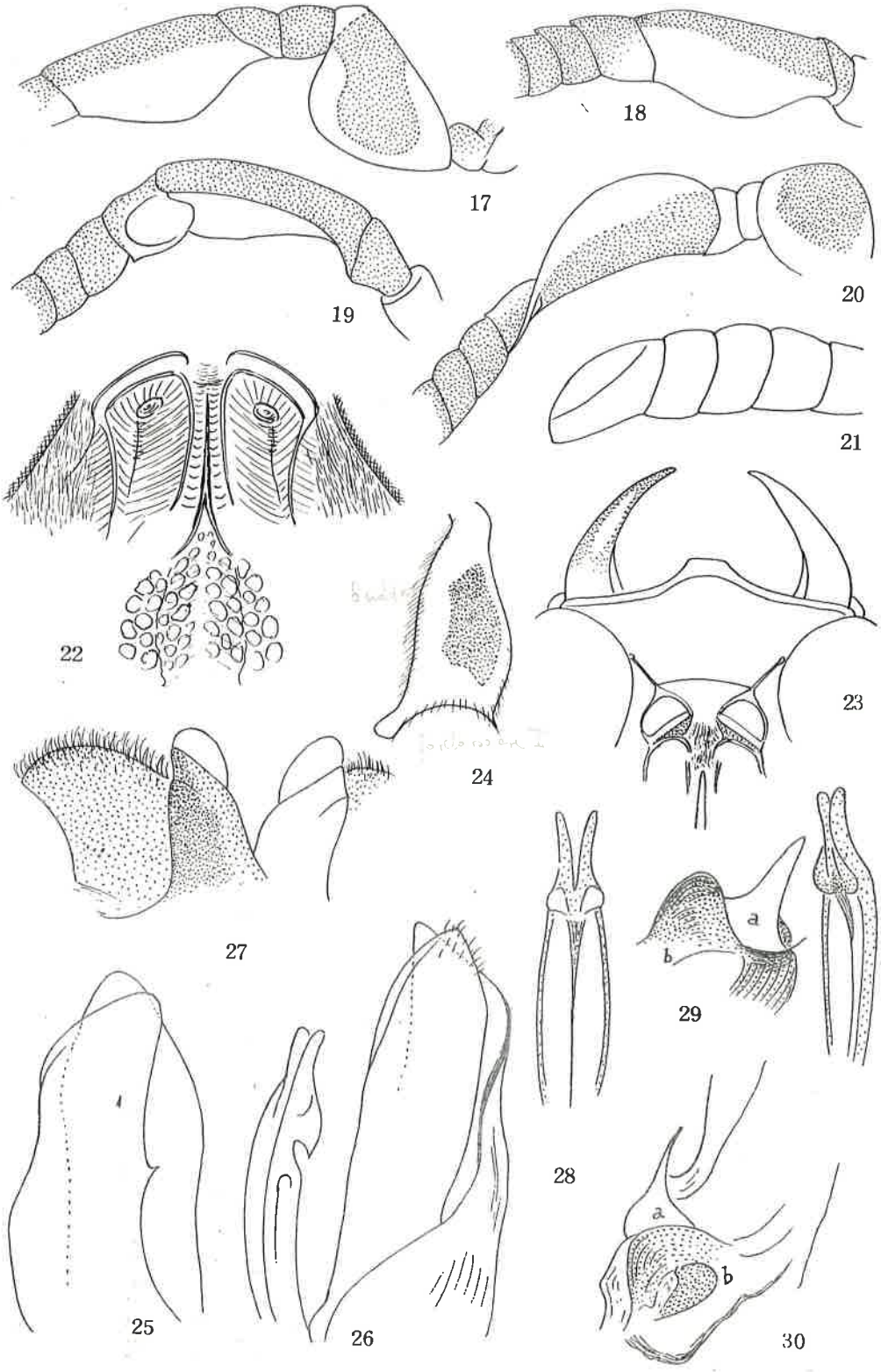
SAT in monstruosum highly keeled, with a deep hollow on each side which is enclosed anteriorly with the transverse carina and externally with a longitudinal ridge, here moreover, another longitudinal carina present just at the foot of median high keel, forming a weak furrow inside that smoothly connected with IAA, interrupting anterior transverse carina (Fig. 22, vertical); in propinquum the structure generally similar, but the lateral hollow much deeper, without inside furrow and anterior rransverse carina is not interrupted in middle (Fig. 35). Clypeus less strongly produced anteriorly in monstruosum than in propinquum (Fig. 36).

Table 1. Relative length of CV1, CV2, TCV and angle formed by CV2 and TCV (standard CV2 as 5)

Species	Island	Sex	CV2	CV1	TCV	Angle
monstr.	Sibuyan	♂	5	6.0	3.0	120°
monstr.	Bagbaran	♂	5	8.5	4.0	120
propin.	Mindoro	♂	5	10.5	5.0	120
propin.	Luzon	♂	5	12.0	5.5	110
? ———	Mindoro	♀	5	11.5	6.0	120
? ———	Mindoro	♀	5	12.0	5.0	120
? ———	Sibuyan	♀	5	10.0	5.0	120
? ———	Sibuyan	♀	5	11.5	4.5	120

Table 2. Measurements on the wing veins with recent specimens (standard CV2 as 5)

Species	Locality	Sex	CV2	CV1	TCV	Angle
propin.	LosBanos	♀	5	11.0	5.0	120°
"	"	♀	5	10.5	4.5	120
"	"	♀	5	11.0	4.0	120
"	"	♀	5	11.5	4.0	120
"	"	♀	5	11.0	4.0	120
"	"	♀	5	12.5	4.0	120
"	"	♀	5	11.5	5.0	120
"	"	♂	5	11.0	4.5	120
"	"	♂	5	12.5	5.0	120
"	"	♂	5	12.0	5.0	120
"	"	♂	5	12.5	5.0	120
"	"	♂	5	11.5	5.0	120
"	"	♂	5	12.0	5.0	120
"	"	♂	5	12.0	5.0	120
buddha	Mactan	♀	5	10.5	4.5	120
"	"	♀	5	11.0	5.0	120
"	"	♀	5	11.5	5.0	120
"	"	♀	5	11.0	4.5	120
"	Negros	♀	5	10.0	4.5	120
"	Mactan	♂	5	12.0	5.5	110
"	"	♂	5	9.0	4.0	110
"	"	♂	5	10.5	4.5	110
"	"	♂	5	10.0	4.5	110
"	"	♂	5	10.5	4.5	120
"	"	♂	5	7.0*	3.0*	110
"	"	♂	5	10.5	4.5	110
"	"	♂	5	9.5	4.5	120


17
18
19
20
21
22
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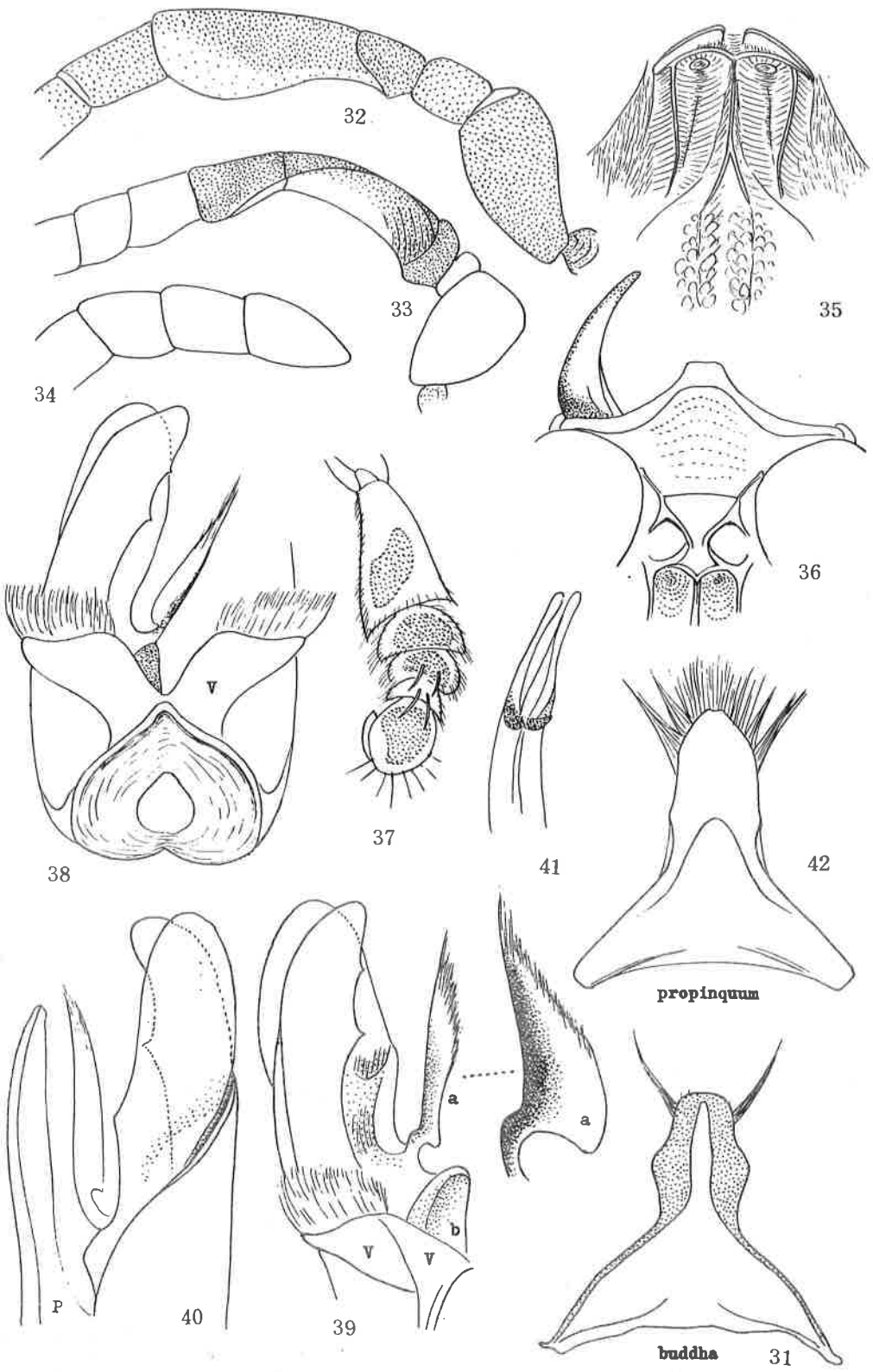
24
25
26
27
28
29
30
a
b
a
b


32
33
34
35
36
37
38
41
42
propinquum
39
40
buddha
31
a
b
V
P

Fore T1 in monstruosum provided with a flat elongate process at inner-apical corner (Fig. 24), in propinquum none (Fig. 37).

Relative length between CV1 and CV2 differs markedly between the two species (cf. Tables 1 and 2).

Colour of legs also more or less different: In monstruosum fore tibia in front thoroughly and all tibial spurs white, mid tibia on inner side at base and at apex, hind tibia at base (on inner side brown), mid T1 and T2 each at base and apex, T3 at apex and whole of T4 ferruginous, hind T1 at apex and T2,3,4 largely ferruginous; in propinquum, however, legs black, fore and mid tibiae at base and fore T1 and 4 brown, tibial spurs all brown and hind leg without pale area.

Genitalia in monstruosum (already given in detail in the original description of monstruosum in 1974): Paramere: Fig. 25 (left, ventral) deeply, nearly to base, split into two broad lobiform layers, broadly dark brown in colour, ventral lobe bearing a hook near middle of inner margin and two on ventral surface. Seen dorso-laterally (with penis): Fig. 26 (left), volsella characteristic (Fig. 27, ventral), provided with a semitransparent amber-coloured layer at apex and a broad pale yellowish membrane at outer side which is closely dotted with blackish points and fringed with short hair at apical margin. Special appendage between inner base of paramere and volsella: (a) (elongate triangular lamellate pale yellow layer) and (b) (thick rounded dark brown plate including darker layer), as shown in Figs. 29 and 30. Penis valve seen from beneath: Fig. 28, also in Figs. 26 and 29, with a pair of primitive sickle-shaped appendages before apex, which is more deeply ferruginous and hook-shaped in dorso-lateral view (Fig. 26).

While in propinquum general feature seem from beneath: Fig. 38 (right paramere and penis valve omitted), seen slightly more apically to see base of special appendage: Fig. 39, paramere and penis valve in lateral view: Fig. 40. General structure similar in pattern, but ventral lobe of paramere with 2 hooks on inner margin and with none on the ventral surface, volsella without apical amber-coloured layer or cap and without lateral dotted membrane, but volsella slightly more extended and fringed with long hair at apical margin (Figs. 38, 39). As to special appendages, (b) is generally similar, but (a) is considerably different,

The apparent males of T. buddha collected in the Philippines can be, thus, clearly separated into closely related two species. But as to females, at least four specimens before me, it is impossible to divide them into two groups corresponding to the two forms of the males above mentioned, when the individual variations are taken into consideration. They must be one and same species and according to the detailed redescription and figures (especially of SAT-ASR) of the holotype of buddha they are considered to belong to this species. However, it can not be determined which of the monstruosum and propinquum does represent the true male of buddha, because the four female specimens of possible buddha in question are intermediate in character between the two, namely they are rather close to propinquum in the supraantennal structure and to monstruosum in the colour of mid and hind legs.

At the moment of this deadlock I received rich collections of the genus from 4 hymenopterists of Fukui, Miss C. Nozaka and Messrs T. Tano, H. Kurokawa and T. Murota who made recently repeated visits to the Philippine Islands either singly or in some groups and collected abundant material of the hymenopterous insects. In their collections are included 12 ♀ 15 ♂ of the two species above mentioned, of which 8 ♂ belonged to monstruosum and all were collected exclusively in the Island of Mactan, lying off the eastern coast of Cebu, together with 4 ♀ (all leg. C. Nozaka). The remaining 7 ♂ belonged to propinquum and were collected concentrically from Los Banos in Luzon, together with 8 ♀.

The females accompanied of the respective locality must belong respectively to monstruosum and propinquum.

Through the procedure above mentioned the females of monstruosum and propinquum were discovered and the differences between them were made clear.

According to the result, fortunately the female of monstruosum is nothing else than the female of buddha Cameron, fortunate because the sex-combination of buddha previously made could survive without alteration and could avoid one confusion in nomenclature.

The characters of the female of the respective species will be given in the section of each species.

On the Indo-Malayan specimens

In connection with the discovery of T. propinquum the Indo-Malayan specimens of so determined buddha were revised. They were surely all T. buddha Cameron, although no particular notice was taken regarding SAT-ASR etc. at the time of identification.

5. TRYPOXYLON BUDDHA CAMERON 1889

Trypoxylon buddha Cameron, Mem. Manchester Lit. Phil. Soc., 4 (2): 119, 1889 (♀, India)
Trypoxylon buddha: Bingham, Faun. Brit. Ind., Hym. I: 225, 1897.
Trypoxylon monstruosum Tsuneki, Pol. Pism. Ent., 44: 633, 1974 (♂, Thailand).
Trypoxylon buddha tarawakanum Tsuneki, Steenstrupia, 4: 92, 1976 (♀, Philippines).
Trypoxylon buddha: Tsuneki, SPJHA, 8: 1, 33, 1978 (syn. redescription of holotype).
Trypoxylon buddha: Tsuneki, ibid., 10: 8, 1979 (♀, Ceylon)
(Trypoxylon buddha: Bohart & Menke, World Sphecid., p. 345, 1976, listed).

Specimens examined: 2 ♀ 1 ♂, Is. Sibuyan, C. F. Baker (USNM); 1 ♂, Bagbatan Is., VI. 1918, R. C. McGregor (USNM); 1 ♀, Mindoro, San Jose, III. 1945, E. S. Ross (CAS); 1 ♀, Mindoro, East, 15. IV. 1953, Townes family (AEI); 4 ♀ 8 ♂, Mactan Is. near Cebu, 28. III. 1979, C. Nozaka (Coll. Nozaka); 1 ♀, Negros, Mambucal, 2-3. IV. 1979, C. Nozaka (Coll. Nozaka).

Remarks. In ♂ frontal median elevation higher and narrower than in ♀ and more acutely and deeply furrowed in middle, medio-apical longitudinal keel-like elevation also narrower and acuter, with a narrow weak furrow at foot of each side which is smoothly connected with IAA (Fig. 22). Clypeus: Fig. 23, shorter than in propinquum, with apical smooth area along the margin much narrower than in this (cf. Fig. 36).

In ♀ SAT-ASR slightly different from that of ♂, it has not a lateral furrow at foot of each side of median keel-like SAT; anterior transverse carina of SAT upcurved on each side, hence appearing medianly incised in dorsal view. Disc of clypeus markedly roundly elevated, medio-apical prominece narrower and much longer produced anteriorly than in ♂ (Fig. 43); mandible with a weak tooth on inner margin near middle (do.). Important characters to separate it from closely related propinquum are:

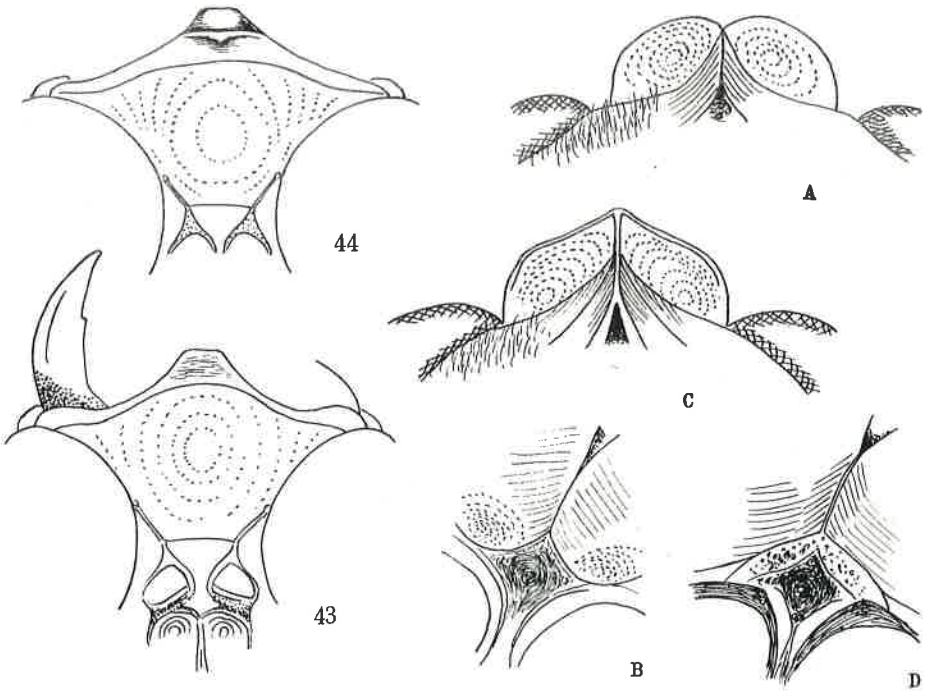
(1) Al. At base and at apex narrowly ferruginous.
(2) Basal condyle of Al. Ferruginous beneath.
(3) Hind tibia. At base ferruginous.
(4) Tibial spurs. Nearly white.
(5) Maxillary palpus. From joint 1 to base of 3 brownish, rest whitish.
(6) Fore T1-4 each at base and apex ferruginous.
(7) Supraantenal transverse carina in dorsal view medianly triangularly incised (Fig. A), in ventral view appearing down-curved on each side (Fig. B), because each lies oblique in vertical view.
(8) Medio-apical prominence of clypeus somewhat different in form (Fig. 43, cf. Fig. 44 in propinquum), apical part brown and surface not flat and not shining.

As to the male genitalia, it must be noticed that the closely black-dotted whitish membrane attached to the side of volsella is apt to drop off during the manipulation of dissection.

Table 3. Measurements on Trypoxylon buddha (first six) and propinquuum (next six)

♂♀	HL	IODv	A3	A13	A11+12	P	IODs	A3*	A3	A4	A5	OD	Od	PD	Ma	Mi	2(Ma)	3(Ma)	RC
♀	62	27	14	-	-	120	7.2	2.2	10	10	7	0	5	5	23	10	62(22)	68(28)	B
♀	62	27	14	-	-	118	7.5	2.2	10	10	8	0	5	5	22	10	67(22)	70(29)	B
♀	62	26	14	-	-	128	7.3	2.3	10	10	7	0	6	5	21	10	62(23)	62(25)	B
♂	62	28	9	16	10	116	8.0	1.7	10	26	10	1	5	6	23	11	64(24)	62(28)	B
♂	60	30	11	18	12	123	8.3	1.6	10	26	9	1	5	6	20	9	70(21)	62(30)	B
♂	62	30	10	18	14	124	8.0	1.7	10	28	8	0.5	5	5	20	9	72(22)	68(26)	B
♀	65	26	15	-	-	126	6.5	2.5	10	10	7	0	5	7	23	10	68(23)	70(28)	B
♀	65	25	16	-	-	128	7.0	2.2	10	10	8	0	5	6	22	9	66(24)	68(28)	B
♀	69	25	16	-	-	124	7.0	2.2	10	10	8	0	5	5	24	10	70(24)	74(31)	B
♂	74	27	8	14	17	102	7.5	1.7	10	20	12	0	5	5	26	12	80(30)	78(36)	B
♂	68	28	8	14	16	118	7.5	1.8	10	20	11	0	5	6	25	12	70(25)	72(33)	B
♂	70	28	9	13	16	125	7.5	1.8	10	19	11	1*	5	7	21	9	69(23)	66(30)	B

Remarks. HL ——— P ... HW=100 is omitted. Ma ——— 3(Ma) ... P=100 is omitted.
A3* ... L/W of A3. IODs ... 10: is omitted.



Figs. 43, A, B ... buddha, ♀. Figs. 44, C, D ... propinquum, ♀

6. TRYPOXYLON PROPINQUUM SP. NOV.

As to the male of this species detailed explanation was already given in connection with T. buddha (cf. p. 16-20, Figs. 32-42).

The characters of the female that are important to separate it from T. buddha are as follows:

(1) Al completely black (difference in size is not conspicuous).
(2) Basal condyle of Al wholly black.
(3) Hind tibia wholly black.
(4) Tibial spurs somewhat brownish, especially of hind leg.
(5) Maxillary palpus: joints 1-4 black above and on an average somewhat longer, joint 5=AW×4 (in buddha A5=AW×3).
(6) Fore tarsus. T1 at apex and T4 brown, rest black.
(7) Supraantennal transverse carina in dorsal view not incised in middle (Fig. C), in ventral view (Fig. D) distinctly up-curved.
(8) Medio-apical prominence of clypeus nearly wholly black, apical part with surface bevelled, flat, smooth and shining, apical margin at the sides, near base of mandible, not roundly expanded anteriorly as done in buddha (Fig. 44, cf. Fig. 43 in buddha).

Remarks. In both ♀ and ♂ Gl, 2, 3 each with a distinct fovea at apex in middle. Mandible with a short tooth on inner margin near middle as in buddha.

Holotype: ♂. Manila, 10. I. 1953, Townes family (AEI).

Paratypes: 1 ♂, Manila, 19. XII. 1924, R. C. McGregor (USNM); 4 ♀, Luzon, Prov. Laguna, Los Banos (in village), 31. III. 1978, T. Tano (Coll. Tano); 3 ♀, the same data, C. Nozaka (Coll. Nozaka); 2 ♀ 7 ♂, the same data, T. Murota (Coll. Murota); 1 ♀, the same place, 2-3. IV. 1979, T. Murota (Coll. Murota); 1 ♀, Luzon, Prov. La Union, San Fernando, sand shore, 27. III. 1978, C. Nozaka (Coll. Nozaka).

Distribution. So far known endemic to Is. Luzon.

7. TRYPOXYLON SINGAPORENSE SURIGAONIS SSP. NOV.

(Trypoxylon singaporense Tsuneki, SPJHA, 9: 29, 1979 (♂, Singapore).
(Trypoxylon singaporense: Tsuneki, ibid., 12: 19, 1980 (♂ ♀, Borneo).

The specimens (♀ ♂) from the Philippines differ from those of Singapore and Borneo in that the frons is without microsculpture and surface is smooth and shining.

Holotype: ♂, Mindanao: Surigao, date undescribed, C. F. Baker (USNM).

Paratypes: 1 ♂, the same as holotype (NSNM); 1 ♀, Samar, - , C. F. Baker (USNM).

Other specimen: 1 ♀, Mindanao: Butuan, - , C. F. Baker (USNM), gaster is lacking.

Remarks. Length ♀, 7.5, ♂, 6.0, 6.3 mm. Except for the frontal sculpture, both ♀ and ♂ well agree in character with those previously treated.

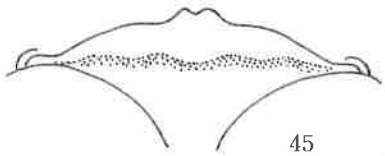
8. TRYPOXYLON FLAVIPES BREVE SSP. NOV.

(Trypoxylon flavipes Tsuneki, SPJHA, 9: 24, 1979 (2 ♀, Laos).
(Trypoxylon flavipes: Tsuneki, SPJHA, 10: 8, 1979 (1 ♀, Ceylon).
(Trypoxylon flavipes: Tsuneki, SPJHA, 12: 17, 1980 (1 ♀ 1 ♂, Borneo).

In the present specimens from Philippines the legs are far more broadly darkened and A4 and 5 are relatively much shorter than in the typical form.

♀. Ground colour of fore and mid legs yellow; fore femur medianly broadly pale brown, mid femur except apical area castaneous, mid tibia on outer side broadly brownish and mid tarsus from middle of T1 apically pale brown. Thus, the Philippine specimens are more broadly brown on legs than in the typical race occurring in Laos and closer in this respect to those of the Bornean specimens, but far more broadly so than in this. Antenna black and A1 completely, A2 except base and clypeus apically broadly ferruginous (not yellow), tubercle yellow; G1, 2, 3, each at base ferruginous yellow.

Head in frontal view subquadrate, W:L=100:92, eye incision broad and deep, subparallel-sided, dorsal margin horizontal. HW,HL,IODv,A3,P=100,67,29,20,150. IODs=10:3. A3=AW×3.3. A3,4,5=10,7,6 (in the Laotian type and specimens from Ceylon and Borneo 10,9,8). OOD,Od,POD=1,6,3.5. P,Ma,Mi, 2(Ma),3(Ma)=100,22,12,62(23),56(24). CV1=CV2×3. TCV:CV2=9:10. RC=B. Rl very long reaching almost wing apex. Clypeus with apical margin laterally more rounded than in the type (Fig. 45) and in this regard similar to Bornean specimen. Propodeum long, extended posteriorly beyond base of hind coxa. In the nominate race propodeal sternite is well developed; here the area is glued on to the card point on which the specimen is mounted and can not be observed. ♂, unknown.



45

Holotype: ♀, Is. Samar, C. F. Baker (USNM).

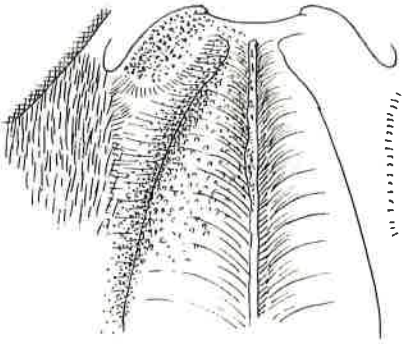
9. TRYPOXYLON CULIONUM SP. NOV.

Diagnosis. ♀, 9 mm. Head thick, IODs=10:3, clypeus: Fig. 49, SAT-ASR: Figs. 46-48. Pronotal collar thick, medianly distinctly tuberculate, mesoscutum microcoriaceous and finely closely punctured, subalar area normal, propodeum with lateral carinae, area dorsalis without lateral furrows, but roundly raised as a whole, gaster slender, G1 clavate, G1=G2+3, G2=AW×2, G1,2,3 each with a minute fovea at apex, A1 largely, clypeus anteriorly, G2,3,4 each at base, fore leg except arolium, mid leg largely and hind leg partly ferruginous yellow, hair silvery, on clypeus parallel.

Closely resembling T. flavipes of the Philippine specimens, but differs from them in that IODc is relatively much broader, namely IODs=10:3.—5

Black (legs dark brown); ferruginous or yellow are A1 except above, A2 at apex, pronotal tubercle (yellow) and posterior part, G2,3,4 at each base, fore leg except arolium, mid leg except a patch on outer side of coxa, a streak on femur beneath and T2-5 except articulations, hind leg on apex of coxa, trochanter, broad base of tibia and articulations of tarsus. Hair silvery.

Head in frontal view with sides rounded, but somewhat subquadrate as a whole, W:H=100:90, vertex not depressed, eye incision broad, convergence towards bottom rather weak, broadly rounded at sinus, frontal elevations fairly high, depression around fore ocellus marked and median furrow of frons broad and deep, frons anteriorly narrowed into low broad SAT, not particularly raised above frons, with median furrow reaching near apex (Fig. 46, vertical view), apex obliquely smoothly inclined to IAA (under natural condition covered with short silvery hair), PAF shallow, broad, upcurved, in cross section simply down-curved (Fig. 47, dorso-lateral, Fig. 48, somewhat from more above), clypeus: Fig. 49, surface flat and reflected at apex, supraclypeal area much wider than wide. Head seen from above thick, with occipital margin



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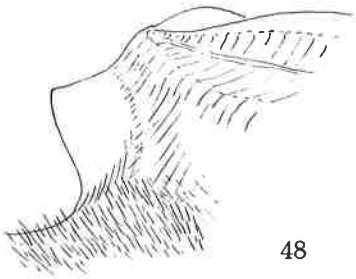

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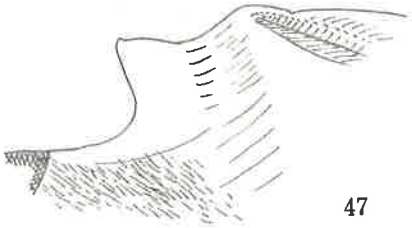

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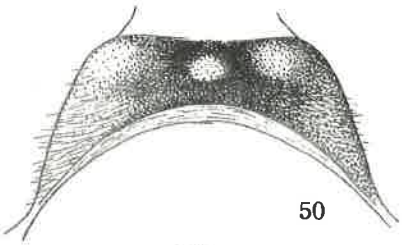

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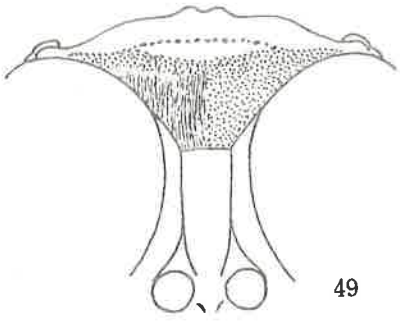

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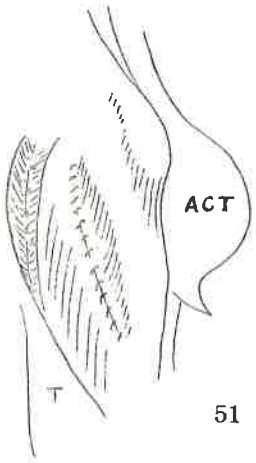


51

strongly emarginate. HW,HL,IODv,A3,P=100,65,32,28,156. IODs=10:4.7. OOD,Od,POD≒1, 6,5. A3≒AWx4.5. A3,4,5≒10,9,9. P,Ma,Mi,2(Ma),3(Ma)=100,20,9,52(21),54(26). Collar of pronotum: Fig. 50, posterior part discoloured, lamina on side: Fig. 51, lam. ((right side, ACT ... AnteCoxal Tubercle. T... pronotal tubercle); postscutellum nearly quadrate, mesopleural scrobe large and deep, subalar area not edge at outer margin mesopleural flange narrow, amber-yellow, lamellate, covering subalar pit, metapleural flange small, black, rounded plate, horizontally stretched out laterally, propodeum long, slender, extending considerably beyond base of hind coxa, but the underside of the extended part simply membraneous connective tissue and development of sternite is not marked, also there is no bordering carina on dorsum and on sides, lateral carinae distinct, originating from just behind spiracle and ending at about mid point of posterior inclination, area dorsalis distinctly raised above surrounding areas, but not margined with furrow, median furrow deep, posteriorly shallowed and enlarged, basal depression of posterior inclination that forms the posterior margin of area dorsalis large and deep and extending posteriorly attenuating. Area apical not developed, lateral carinae also absent at apical area. In fore wing RC=B, Rl long, nearly twice as long as TCV and reaching almost wing apex, CVl≒CV2x5, CV2≒TCV, angle about 120°.

Frons and mesoscutum comparatively weakly microcoriaceous and superimposed with very fine punctures, on frons PIS slightly greater than PD, on mesoscutum somewhat closer, PIS≒PD, on both surface not mat, propodeum with series of feeble striae along lateral carinae, area dorsalis from base transversely finely and very closely striate striae on median furrow stronger, but posteriorly weak, posterior inclination finely sparsely punctured, but near apex transversely weakly striate, sides obliquely finely closely striate, but median area obliquely without striae, smooth and shining.

♂, unknown.

Holotype: ♀, Culion Is., 6.km west of Culion, 6. VI. 1962, H. Holtmann (Malaise trap) (BPBM).

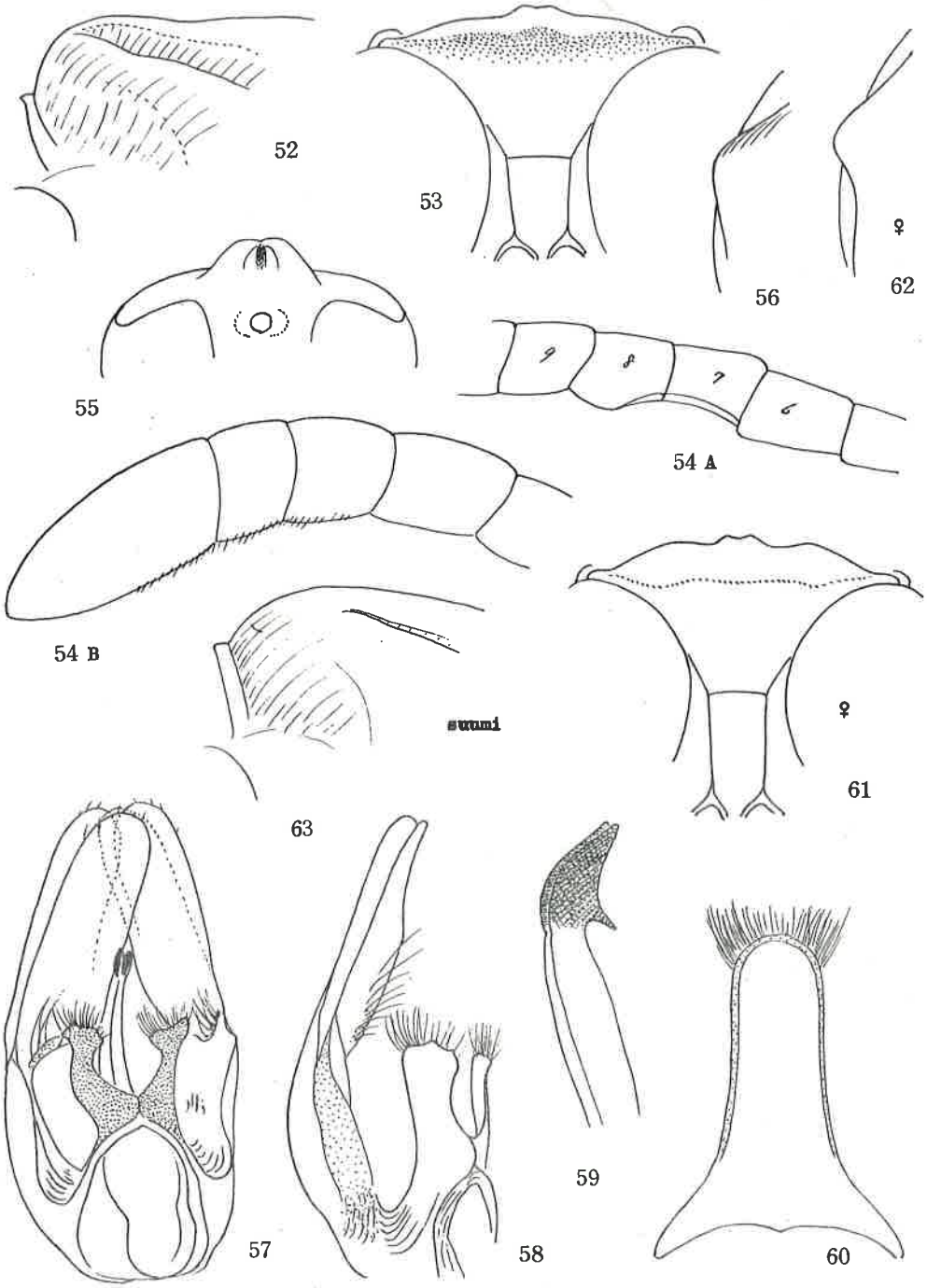
10. TRYPOXYLON TADAONIS SP. NOV.

Apparently very similar to T. suumi (♂) known from Laos; differs from it in that SAT is more highly raised (Fig. 52, cf. Fig. 63, antenna similar in structure, but slightly longer as a whole (each joint slightly longer), OOD:POD=1:2 (in suumi =1:3), Rl slightly longer than TCV (in suumi slightly shorter than TCV). Thus external differences are only slightly, but the differences in structure of male genital organs and 8th sternite are very marked.

Diagnosis. ♂ 6.5, ♀ 7.5 mm. Slender species, Gl clavate, G2 more than AW 2, head thick, SAT-ASR: Fig. 52, mesoscutum microcoriaceous and finely closely punctured, propodeum long, with propodeum sternite, lateral carinae distinct, area dorsalis raised but not enclosed with furrow, only posterior margin distinct, due to deep depression at base of posterior inclination, Gl,2,3 each with a minute fovea at apex, gaster black, fore and mid legs broadly, hind leg partly yellow; in ♂ A7,8 excavated beneath and 8 produced at apex, Al3: Fig. 54,B.

Head in frontal view subquadrate, almost not convergent towards clypeus, W:L=100: 88, eye incision broad, subparallel, sinus broadly rounded, dorsal margin horizontal, frons depressed around fore ocellus, surface flat and furrowed in middle, the furrow subrhombic in outline, at base not connected with fore ocellar depression and deeper forwards, reaching top of apical elevation(=SAT) which is rounded, in lateral view SAT-ASR: Fig. 52; clypeus: Fig. 53, surface nearly flat (transversely gently roundly raised), without apical reflection. Head from above thick, with occipital margin strongly roundly emarginate, anteriorly SAT roundly produced (Fig. 55). HW,HL,IODv, A3,Al3,P=100,62,33,11,23,136. IODs≒10:5. OOD,Od,POD≒1,3,3. A3≒AWx2. A3,4,5≒10,6, 7. Al3=BWx1.8 and >All+12. A7-8 excavated beneath and 8 produced at apex beneath (Fig. 54,A), A9-13: Fig. 54,B (slightly more magnified than Fig. 54,A), P,Ma,Mi,2(Ma) 3(Ma)=100,21,10,62(24),52(26). Collar of pronotum thick, anterior part medianly minutely tuberculate, posterior part narrow, discoloured, somewhat yellowish and densely covered with hair, lamina on side gently roundly produced (Fig. 56), subalar area without pent-roof structure, subalar longitudinal furrow and especially -pit deeply excavated. Propodeum long, markedly extended beyond base of hind coxa, propodeal sternite distinct, black, but the extended part not bordered anteriorly with transverse carina, lateral carinae of the segment strong and distinct, but not reaching apex, area dorsalis raised, but without lateral furrows, median furrow of posterior inclination at base broad and deep, distinctly margining area dorsalis, posteriorly

narrowed and shallowed, reaching near GSR which is raised as a transverse carina, not roundly elevated and not discoloured. Gl appr. 5 times as long as wide at apex, G2,3 also long (see measurements). In fore wing RC=B, Rl fairly long, ≒TCV, but not reaching wing apex, CV1≒CV2×3.5, CV2≒TCV, angle about 100°.



Genitalia markedly different from those of suumi, seen from beneath: Fig. 57, obliquely from side: Fig. 58, volsella characteristic in form, well chitinized, dark brown in colour and apex fringed with long white hair, paramere deeply bifid into membraneous lamellae, inner lobe at base on inner marginal area with a tuft of long hair. Penis valve with apical area chitinized to blackish brown and provided with a tooth, a primitive sickle-appendage (Fig. 59, dorso-lateral view); 8th sternite: Fig. 60, also very strange in form.

Frons distinctly microcoriaceous and closely superimposed with fine punctures, mesoscutum microcoriaceous and very sparsely and very finely punctured, on antero-lateral areas almost without puncture, only on medio-posterior part punctures somewhat close and distinct. On propodeum lateral series of striae distinct, area dorsalis transversely closely striate on median furrow, on disc mixed with punctures, appearing minutely subreticulate, posterior inclination transversely finely closely striate, sides on anterior half polished and largely obliquely, closely and weakly striate, posteriorly with close and strong oblique striae.

♀. Slightly larger, similar to ♂ except sexual characters. Head in frontal view with ratio of W:L=100:94, eye incision broader than in ♂ and more distinctly convergent towards bottom, dorsal margin horizontal; head in dorsal view with occipital margin more strongly roundly emarginate than in ♂. HW,HL,IODv,A3,P=100,94,31,19,150. IODs=10:4. OOD,Od,POD=1,6,6. A3=AW×3.3. A3,4,5=10,7,7. P,Ma,Mi,2(Ma),3(Ma)=100, 21,12,56(23),62(28). RC=B. Rl longer than TCV, reaching very close to wing apex. CV1=CV2×3.5, CV2≒TCV, angle about 100°. Clypeus: Fig. 61, pronotal lamina: Fig. 62, both slightly different in form from those of ♂.

Remarks. In the females G2,3,4 slightly brownish at each base.

Hilotype: ♂, Luzon, Prov. Laguna, Los Banos, Botanical Garden, 30. III. 1978, Tadao Murota leg. (Coll. Murota).

Paratypes: 1 ♀, Luzon, Los Banos, in village, 31. III. 1978, T. Murota; 1 ♀ 1 ♂, Los Banos, Botanical Garden, 2-5. VIII. 1978, T. Murota (1 ♀, Coll. Murota; 1 ♀ 1 ♂, Coll. Tsuneki).

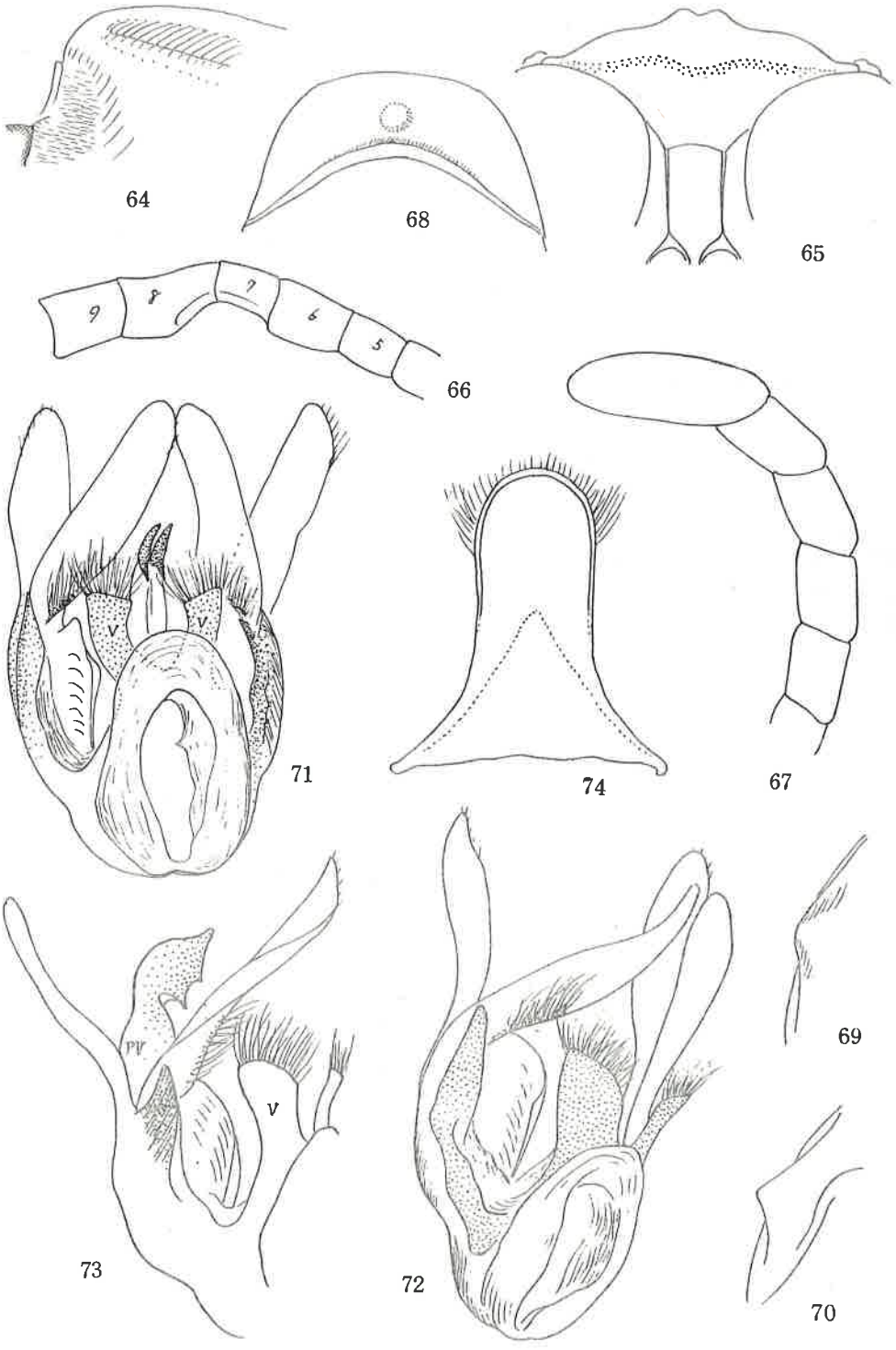
11. TRYPOXYLON PANITIANUM SP. NOV.

Closely resembling the preceding species, differeing therefrom in that Al1, 12, 13 are relatively much longer, Rl shorter, =TCV and all trochanters yellow. It also resembles T. suumi, differs from it in that Al3 is relatively much longer.

Diagnosis. ♂, 6 mm. Antenna basally, fore leg largely, other legs partly yellow, hair silvery; head thick, IODs≒2:1, SAT-ASR: Fig. 64 (dorso-lateral), clypeus: Fig. 65, antenna: Figs. 66, 67; mesoscutum microcoriaceous and punctured, propodeum with lateral carinae, area dorsalis without lateral furrows, propodeal sternite present, gaster slender, G1,2,3 each with a foveola at apex.

♂. 5.7 mm. Black, yellow are Al and 2 broadly beneath, apical margin of clypeus, mandible (apically glossy pale brown), palpi, humeral tubercle (nearly white, with a minute blackish patch), fore leg except greater part of femur and arolium, ante-coxal area of mesternum, mid coxa (at base blackish above), trochanter, knee, tibia largely (folded side and a streak on outer side brown), Tl except brown mark on apical portion above, hind coxa at apex, trochanter, tibia at base and fore and mid tibial spurs (hind ones brownish). Mind and hind tarsi brown, with articulations and T4 paler, tegula brown, transparent on anterior half, basal plate of fore wing brown, of hind wing pale ferruginous, G2,3,4 each at base somewhat brownish. Hair silvery, on clypeus parallel.

Head in frontal view somewhat quadrate, but with sides fairly rounded, W:L=100: 88, eye incision very broad and narrowed towards bottom, dorsal margins of both sides in a line, frons similar in structure to that of preceding species, but median furrow broader and shallower, SAT-ASR in dorso-lateral view: Fig. 64, similar to that of the preceding species, clypeus: Fig. 65, disc flat, apical reflection weak. Head in dorsal view with occipital margin gently roundly emarginate (not strongly so as in tadaonis), HW,HL,IODv,A3,Al3,P=100,66,32,12,28,134. IODs=10:5.2. OOD,Od,POD≒1,3,3. A3= AW×2, A3,4,5=10,7,6.5. Al3=BW×3, A7 and 8 excavated beneath and 8 produced at apex (Fig. 66), Al3 slightly longer than All+12 (Fig. 57). P,Ma,Mi,2(Ma),3(Ma)=100,26,14, 54(29),50(32). Foveolae on G1,2,3 each open at posterior margin. RC=B. Rl moderately long, appr. as long as TCV, CV1=CV2×2.2, TCV:CV2=3:2, angle about 100°.



Figs. 64-74. **<u>Trypoxylon panitianum</u> sp. nov., ♂**

Collar of pronotum in vertical view: Fig. 68, posterior part discoloured, dusky yellow, lamina on side laterally triangularly produced, hence in lateral view inconspicuous (Fig. 69), but in dorsal or dorso-lateral view (Fig. 70) very marked. Postscutellum nearly square, subalar area without pent-roof structure, subalar furrow and -pit very deep; propodeum with posterior inclination longer than area dorsalis, strongly extended posteriorly beyond base of hind coxa, extended area with distinct (black) sternite, lateral carinae of the segment strong, but on sides of posterior inclination disturbed with close strong punctures, area dorsalis raised, but without lateral furrows, only posteriorly margined with the wide deep depression of the top of median furrow of posterior inclination, the furrow not reaching apex of the segment, ending at base of posterior extension.

Genitalia also considerably similar to those of tadaonis, but differs in the form of volsella (V) and penis valve (PV). Seen somewhat obliquely from beneath: Fig. 71, obliquely from beneath: Fig. 72 (penis omitted), nearly from left side: Fig. 73. Sternite 8 also similar to that of tadaonis, but somewhat broader (Fig. 74, cf. Fig. 61).

Frons distinctly microcoriaceous and fairly closely superimposed with fine punctures, punctures partly obliquely, somewhat rugosely contiguous with each other; mesoscutum similarly microcoriaceous and punctured, punctures close even on medio-posterior area, but not rugosely confluent, propodeum with weak lateral series of striae, but the striae are disturbed with strong punctures mixed and not conspicuous, area dorsalis indistinctly sparsely punctured on disc, finely irregularly reticulate on wide shallow posterior part of median furrow, outside the area dorsalis surface distinctly punctured, posterior inclination posteriorly transversely coarsely striate, sides obliquely finely closely and delicately striate, but on posterior extended area transversely strongly striate and on antero-ventral femoral sinus irregularly punctured, not smooth and polished as usual.

♀, unknown.

Holotype: ♂, Is. Palawan, Panitian, 6. V. 1967, M. D. Delfinado (HPBM).

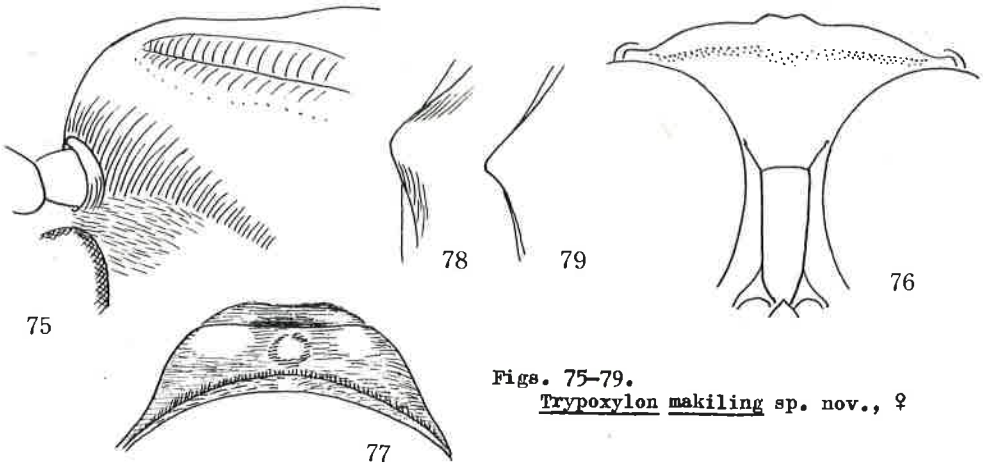
12. TRYPOXYLON MAKILING SP. NOV.

Closely allied to T. indianum , can be distinguished therefrom by the relatively longer antenna (A9 and 10 here L>W, there L<W) which is less strongly thickened apically, by the much more strongly emarginated occipital margin (in dorsal view), more pointed lamina of pronotum and by the broadly darkened mid trochanter.

Diagnosis. Slender species, about 7 mm, Gl,2,3 each with a fovea at apex, head and prothorax thick, SAT roundly swollen, IODs=2:1, clypeus medianly bluntly bidentate, A3=AW 3, propodeum extended posteriorly beyond base of hind coxa, but propodeal sternite not well developed, RC=B, Rl long, longer than TCV, fore leg broadly, mid tibia nearly wholly and hind tibia at base yellow.

♀. Black, ferruginous or yellow are Al-2 beneath (brown above), apical margin of clypeus, mandible, palpi, pronotal tubercle, tegula and basal plates of wings, base narrowly of G2 and 3 (brownish), apices of coxae, fore trochanter, base and apex of fore femur, apex of mid femur, mid tibia except a brown streak on folded side, hind tibia at base broadly and apex narrowly, fore tarsus except arolium, mid Tl at base and tibial spurs, rest of antenna and legs brown or dark brown and articulations of tarsi paler. Hair silvery, on clypeus parallel.

Head in frontal view subquadrate, W:L=100:90, eye incision broad, gently narrowed towards bottom, dorsal margin horizontal, frontal elevations moderately high, narrowed apically into rounded SAT, median furrow borad and deep, ending at top of SAT, SAT-ASR in dorso-lateral view: Fig. 75, clypeus: Fig. 76, supra-clypeal area markedly long, head from above with occipital emargination markedly strong. HW,HL,IODv,A3,P= 100,70,31,21,130. IODs=10:4. OOD,Od,POD=1,4,4. A3=AWx3. A3,4,5=10,8,6. P,Ma,Mi, 2(Ma),3(Ma)=100,22,11,64(21),62(25). Collar of pronotum: Fig. 77, posterior part discoloured, dusky yellow, lamina on side (Figs. 78, lateral, 79, dorso-lateral) triangular, obliquely produced outwards, postscutellum quadrate, subalar area without pent-roof structure. Propodeum extended posteriorly beyond base of hind coxa, but the area beneath broadly membraneous, whitish, well chitinized blackish sternite only narrowly at base present, lateral carinae of propodeum distinct at medial area, both ends disturbed with punctures and indistinct, area dorsalis raised above surrounding areas, but without lateral furrows, median furrow deep and moderately broad, median furrow



Figs. 75–79.
Trypoxylon makiling sp. nov., ♀

of posterior inclination wedge-shaped, very deep, especially at base, namely at posterior margin of area dorsalis. G1,2,3 each with a minute foveolus at apex in middle, the foveolus not open posteriorly. RC=B, but somewhat close to C, R1 moderately long, slightly longer than TCV, reaching close to wing apex, CV1≒CV2×2, CV2:TCV≒1:1, angle about 105°.

Frons distinctly microcoriaceous and closely but not rugosely superimposed with distinct punctures, mesoscutum with similar sculpture, but punctures partly transversely subrugosely contiguous with each other; lateral series of striae on propodeum only on median part defined, at base and at apex broadly disturbed with punctures, ar area dorsalis transversely distinctly closely striate, median furrow of posterior inclination also transversely striate.

♂, unknown.

Holotype: ♀, Luzon, Mt. Makiling, C. F. Baker leg. (USNM).

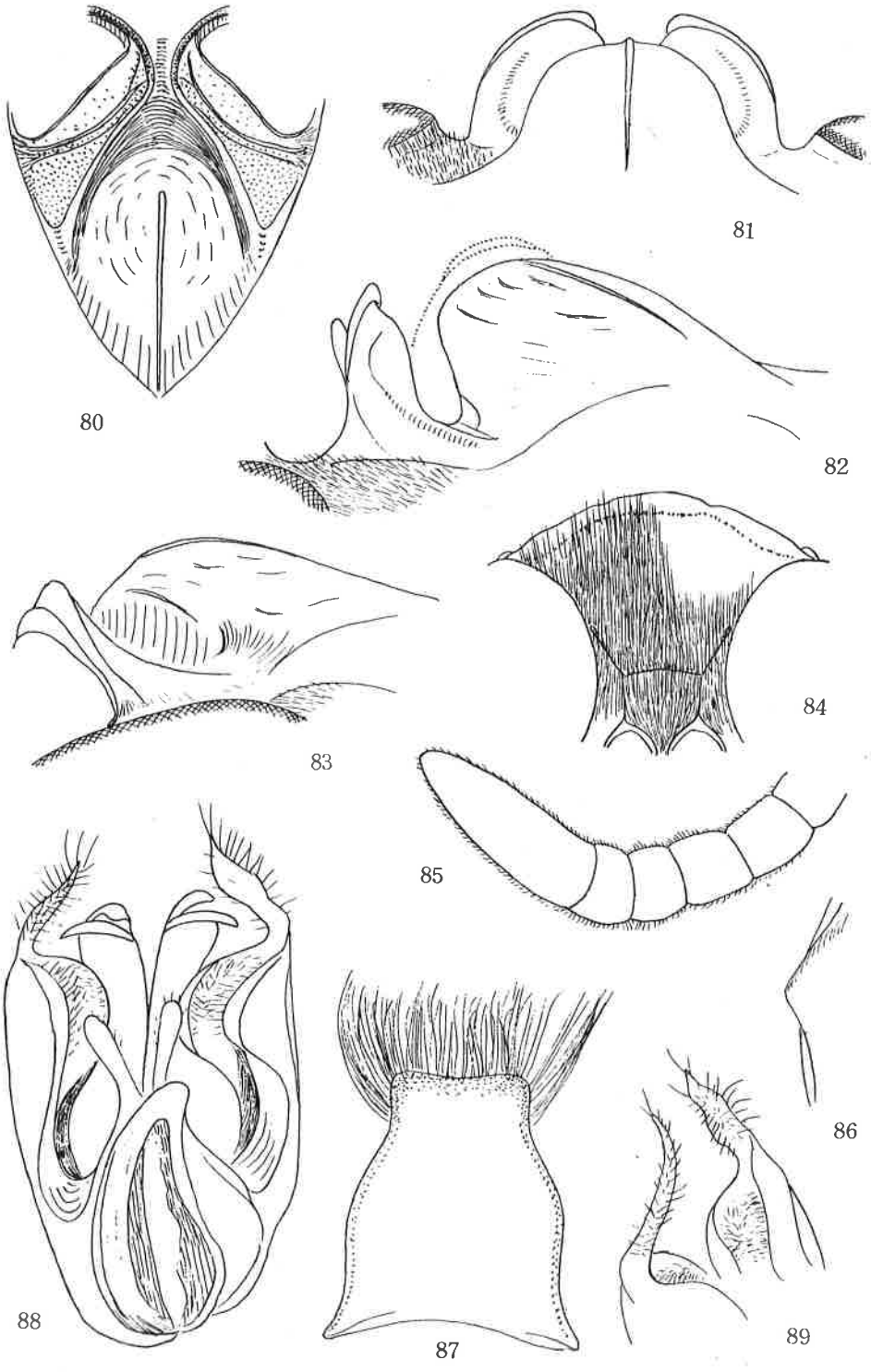
13. TRYPOXYLON SEMPRRI SP. NOV.

In structure somewhat close to T. kuchingense known from Borneo, but in the present species gaster is black, mesoscutum distinctly microcoriaceous, PAF very deep, A13=A9–12 and the form of clypeus and G2 also somewhat different.

The present species is characteristic in having well developed pent-roof structure at subalar area of mesopleuron and together with characters of mesoscutum, SAT-ASR, antenna (Fig. 85), clypeus (Fig. 84), IODs (10:8), laterally carinated propodeum and slender gaster easily separable from other congeners.

♂. 9.5 mm. Black; antenna, gaster and legs strongly brownish (postmortem change ?). A1 and 2 each at apex, apical margin of clypeus, mandible and palpi ferruginous. Hair silvery, on clypeus parallel.

Head in frontal view with sides roundly convergent towards clypeus, vertex fairly depressed, eye incision narrow and deep, subparallel-sided, upper margins of both sides in a line, frons gently raised, medial furrow broad and fairly deep, SAT thick rounded nasiform, finely carinated in middle, apical margin transversely rounded and bluntly edged, PAF very deep, but outer end is blocked by the latero-posterior extension of ASR, ASR highly elevated, as high as SAT, not thick, highly bicarinate on top, seen vertically from above obliquely located and posteriorly extended from outer side (Fig. 80), SAT-ASR in dorsal view: Fig. 81, in dorso-lateral view to see through PAF: Fig. 82, in lateral view: Fig. 83, clypeus: Fig. 84, disc medianly raised and roundly inclined towards sides, apical margin not reflected, A9–13: Fig. 85. HW,HL, IODv,A3,A13,P=100,50,23,17,29,146. IODs=10:8. OOD,Od,POD=1,5,3. A3=AW×2.7. A13=BW×3.2 and ≒A9–12. A3,4,5=10,6.5,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,16,7,40(18),42(30). Pronotum transverse, anterior part ridge-like, only slightly widened towards sides, posterior part discoloured, lamina on side: Fig. 86, subalar area with well-develop-



Figs. 80–89. Trypoxylon semperi sp. nov., ♂

ed pent-roof structure, vertical wall of subalar pit which is covered with the pent-roof is flat and provided with 5 transverse rugosed carinae, black on top, propodeum with lateral carinae, seen from side roundly up-curved, with apical end directed towards mid point between basal side of G1 and hind coxa, not towards lateral carina of area apicalis which is distinct, but not curved inwards at anterior end to enclose the area, while area dorsalis is enclosed with furrow, but the furrow is broad and rather feeble, median furrow fairly deep, slightly widened posteriorly, with a long medial carina that runs from base till beyond middle (constant?). GSR at posterior margin moderately roundly expanded and elevated, brown in colour; propodeum somewhat stretched posteriorly beyond base of hind coxa, but without propodeal sternite, only filled with whitish connective tissue. In fore wing RC=C, but close to M, Rl short, but reaching close to wing apex, CV1=CV2×4.5, TCV:CV2≒5:6, TCV incurved, angle about 100°. Sternite 8: Fig. 87 (drawn from broken part). Genitalia seen from beneath and somewhat from left side: Fig. 88, paramere simple at apex where the surface covered with hair (Fig. 89, apical part in ventro-lateral view), volsella spatulate, penis valve with well developed shoulder and sickle-shaped appendages.

Frons distinctly microcoriaceous and rather sparsely superimposed with fine punctures, punctures on medio-anterior area obliquely contiguous to each other, mesoscutum also distinctly microcoriaceous and finely punctured, PIS 1-2 times PD, propodeum w th series of strioles along lateral carinae, weaker anteriorly, distinct posteriorly, area dorsalis transversely striate on posterior portion, disc covered with comparatively large, indistinctly outlined punctures and posteriorly mixed with fine transverse striae, rest of dorsal and posterior sides sparsely covered with hair-bearing punctules, sides obliquely finely closely striate and on dorsal half mixed closely with fine strong punctures.

♀, unknown.

Holotype: ♂, Luzon, 1864, Carl Semper (NHRM - Naturhistoriska riksmuseet, Stockholm).

14. TRYPOXYLON APPENDICULATUM TSUNEKI, 1974

Trypoxylon appendiculatum Tsuneki, Pol. Pism. Ent., 44: 631, 1974 (♂, Borneo, figs.).
Trypoxylon appendiculatum: Bohart and Menke, World Sphecid., p. 630, 1967 (listed).
Trypoxylon appendiculatum: Tsuneki, SPJHA, 9: 162, 1979 (♂, Malaya, redescr. figs.).
Trypoxylon appendiculatum: Tsuneki, SPJHA, L":21, 1980 (Borneo, measurements).

Specimens examined:

Luzon: Mt. Makiling, Los Banos, Prov. Laguna, 1 ♀ 2 ♂, - , C. F. Baker (USNM); 1 ♂, 17. III. 1960, T. C. Maa (BPBM).

Los Banos, Prov. Laguna, 4 ♀ 2 ♂, C. F. Baker (USNM); 2 ♀, 1. II, 28. III. 1953, Townes family (AEI); Botanical Garden, 30. III. 1978, 4 ♂, C. Nozaka, 4 ♂, T. Murota ; 7 ♀ 29 ♂, 2-5. VIII. 1978, T. Murota, 5 ♀ 8 ♂, same date, H. Kurokawa (each own Coll.).

Hidden Valley Spring, Alaminos, Prov. Laguna: 6 ♀ 8 ♂, 3-4. IV. 1978, T. Tano; 3 ♀ 8 ♂, same date, T. Murota; 4 ♀ 5 ♂, 6. VIII. 1978, H. Kurokawa; 5 ♀ 12 ♂, same date, T. Murota (each own Coll.).

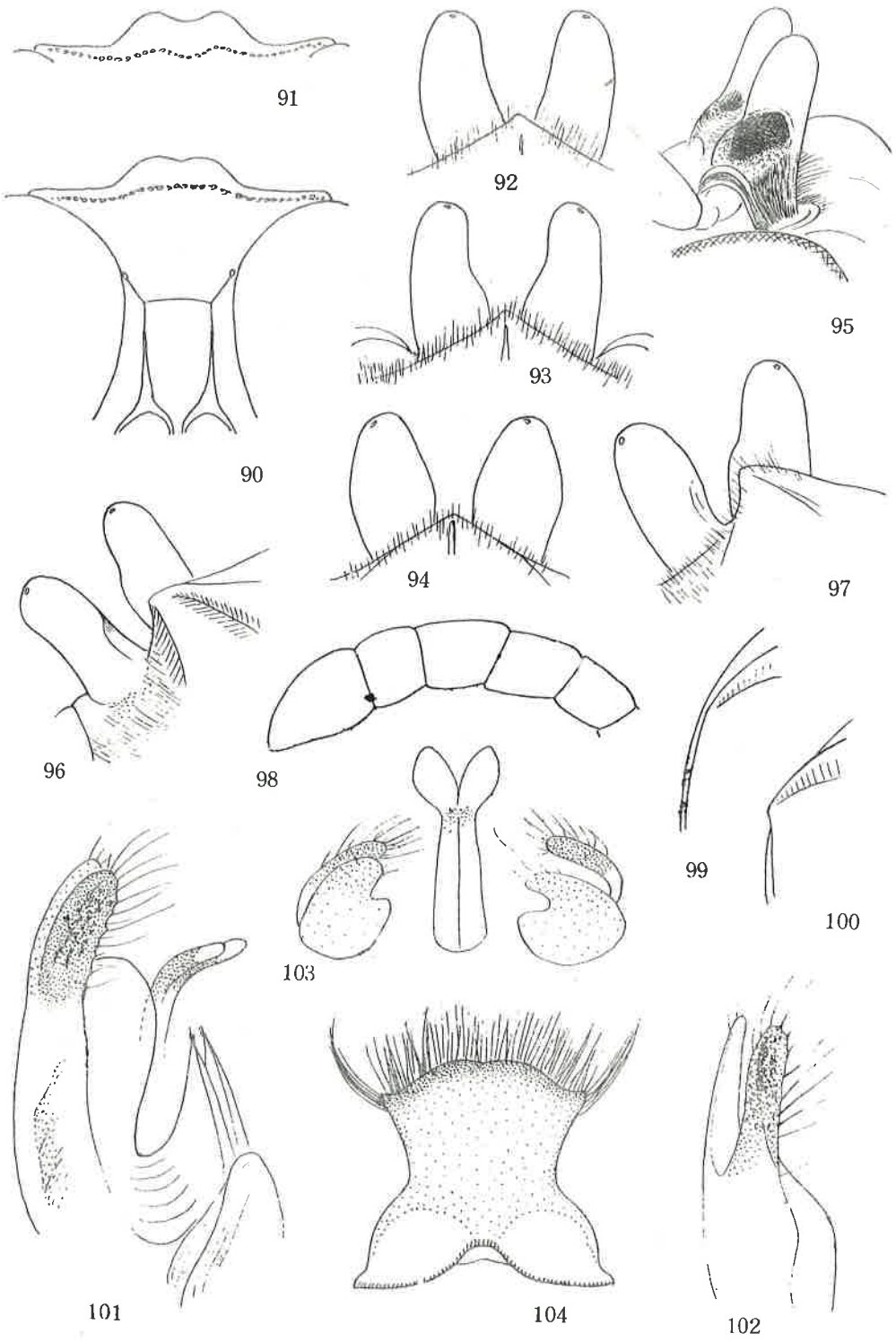
Pagsanjan, Prov. Laguna, 1 ♀, 1. IV. 1978, T. Tano; 2 ♀, 1-2. IV. 1978, T. Murota; 3 ♀ 1 ♂, 7-9. VIII. 1978, H. Kurokawa; 1 ♀ 2 ♂, same date, T. Murota (each own Coll.).

San Fernando, Prov. La Uninn, 1 ♀ 1 ♂, 27. III. 1978, T. Tano (Coll. Tano).
Mindoro: Alcate Vict., 1 ♂, 6. IV. 1954, H., M. & D. Townes (AEI); 1 ♀, Calapan, St. Luis, 15. IV. 1954, H., M. & D. Townes (AEI).
Samar: 2 ♀, - , C. F. Baker (USNM); 1 ♀, Naval Base, IV. 1945, G. E. Bohart (USNM).
Laete: 1 ♂, ?, ?, (USNM).

As in the case of T. buddha this species has been considered unique, here by its strange structure of ASR, but the examination of the Philippine specimens has discovered the occurrence of several closely allied species and the knowledge of detailed comparative characters of other parts of the body and appendages has become necessary to identify the species. In the following are given some comments on these distinctions.

On some characters.

♂. Head. Clypeus: Apical margin medianly produced and in a number of specimens



Figs. 90–104. *Trypoxylon appendiculatum* Tsuneki, ♂

examined always more or less incised or emarginate in middle (Fig. 90), sometimes very deeply so (Fig. 91). The form of ASR somewhat variable: Figs. 92, 93, 94 (dorsal view) but Fig. 94 is rather exception; in nearly lateral view: Fig. 95 (that of Fig. 92), the lower part incrassate anteriorly, carrying a large fovea at the dorsal part of the incrassate area; in dorso-lateral view to see through PAF: Fig. 96 (=Figs. 92, 95), in exceptional one: Fig. 97 (=Fig. 94), a minute foveolus on top of ASR usually present, but sometimes weak and indistinct. SAT is the anterior wedge-shaped part of gently raised frons, not particularly raised above level of frons, but fairly acutely and deeply inclined to PAF, frons medianly gently furrowed, surface on lower portion (including SAT) microcoriaceous and further closely and strongly punctured, mat, upper portion smooth, shining and very finely sparsely punctured, without microreticulation on PIS. Antenna with A1 widely excavated on inner side to received ASR, relative length etc: see measurements, without ventral excavation on any joint, A9–13: Fig. 98. Occipital carina complete, but lowered behind buccal cavity.

Thorax-complex. Anterior part of pronotal collar not elongate, trituberculate, median tubercle conspicuous, posterior part not discoloured, lamina on side usually broadly rounded (Fig. 99), sometimes minutely, weakly angulated at apex (Fig. 100). Subalar area longitudinally lengthened, smooth and shining, with outer margin roundly overhanging to subalar pit, not edged*. As to the structure and sculpture of propodeum detailed explanation using figures was already given in the original description. To be added to this is that although the propodeum is long extended posteriorly beyond base of hind coxa its sternite is not distinctly developed. The ventral side of the area is covered with white membrane (connective tissue) and at the extreme base very narrowly (under natural condition almost unobservable) chitinized sclerite is present. Mesoscutum without microsculpture, finely fairly closely punctured, PIS≧PD.

Genitalia and 8th sternite. Paramere bilobed at apex, the lobes similar in form and size to each other and the lobed area markedly darkened (Fig. 101, left half in ventro-lateral view) and markedly contrasted to pale yellow other parts, ventral lobe is slightly more darkened than the dorsal, with ventral surface sparsely but coarsely punctured and fringed with long hair, dorsal lobe also fringed, but the hair is very sparse and confined to apical margin only (Fig. 102, nearly in lateral view). No appendage present between volsella and base of inner margin of expanded and lamellate main body (Fig. 101). Penis valve and paramere in dorsal view: Fig. 103. 8th sternite: Fig. 104.

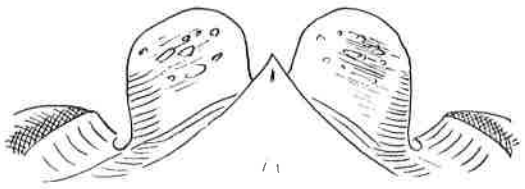
♀ (hitherto undescribed). Generally similar to ♂ except sexual characters, especially remarkable is that ASR is not so highly and vertically elevated as in ♂, as given with Figs. 105 (dorsal), 106 (lateral), 107 (dorso-lateral) and 108 (ventro-lateral). Clypeus similar to that of ♂, usually with an incision or emargination at apex in middle, but sometimes without incision, entire or nearly entire (Figs. 109–113). Antenna and gaster: see Table 4. Pronotum, subalar area, propodeum and general punctuation and sculpture as in ♂, apical extended part of propodeum in lateral view: Fig. 114, in posterior view: Fig. 115, outer outline is the bordering carina of the extended part and inner one is GSR, with ligament of lifting muscle of gaster, the form of GSR seen in this direction is considerably constant to the species and of some use for identification

Table 4. Measurements on Trypoxylon appendiculatum Tsuneki, ♂ and ♀.

Loco	S	HL	IODv	A3(L/W)	A13(L/W)	P	IODs	OD	Od	PD	A4	A5	Ma	Mi	2(Ma)	3(Ma)
Borneo	♂	66	26	11(1.8)	--(--)	130	5.5	1	5	3	8	-	18	9	50(22)	42(30)
Luzon	♂	62	28	11(1.8)	17(2.0)	132	5.5	2	6	5	9	10	18	9	47(22)	42(28)
Luzon	♂	64	26	10(1.8)	18(1.9)	125	6.0	1	5	4	8	10	17	10	48(22)	44(29)
Laete	♂	63	27	11(1.8)	18(1.8)	126	5.5	2	6	5	10	10	18	9	44(22)	42(26)
Luzon	♀	64	26	14(2.7)	--(- -)	142	6.5	1	6	4	10	9	19	8	44(27)	42(36)
Luzon	♀	64	24	14(2.7)	--(- -)	140	7.0	1	5	4	10	9	20	9	47(23)	47(32)
Samar	♀	64	25	14(2.7)	--(- -)	144	6.5	1	5	4	9	9	20	9	45(26)	40(38)
Negros	♀	64	24	14(2.8)	--(- -)	140	6.5	1	5	3	9	9	24	9	45(27)	44(34)

Remarks. ♀ ♂. RC=B, Rl short, CV1≒CV2×3. TCV≒CV2. Angle about 100°.

* In Pt. VI (p. 21) of the present paper the explanation given to this area of the Bornean specimen that it is acutely edged on outer margin is erroneous based on the light condition. In appendiculatum this area is not edged on outer margin, but rounded. The fact is confirmed by observing the outer margin under rolled condition.



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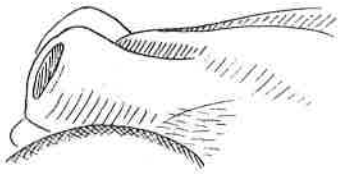

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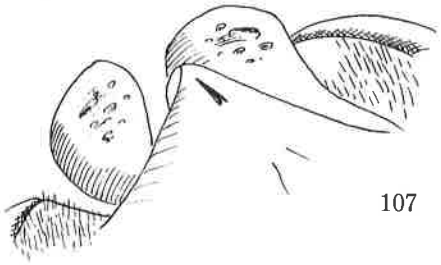

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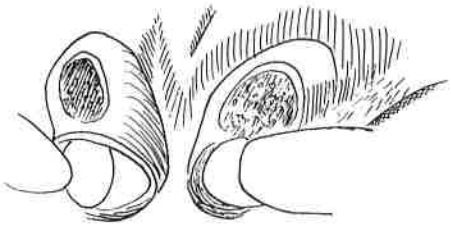

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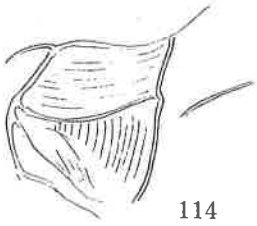

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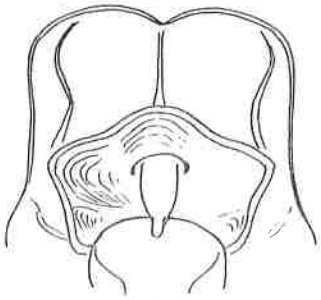

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Figs. 105–115. **Trypoxylon appendiculatum Tsuneki, ♀**

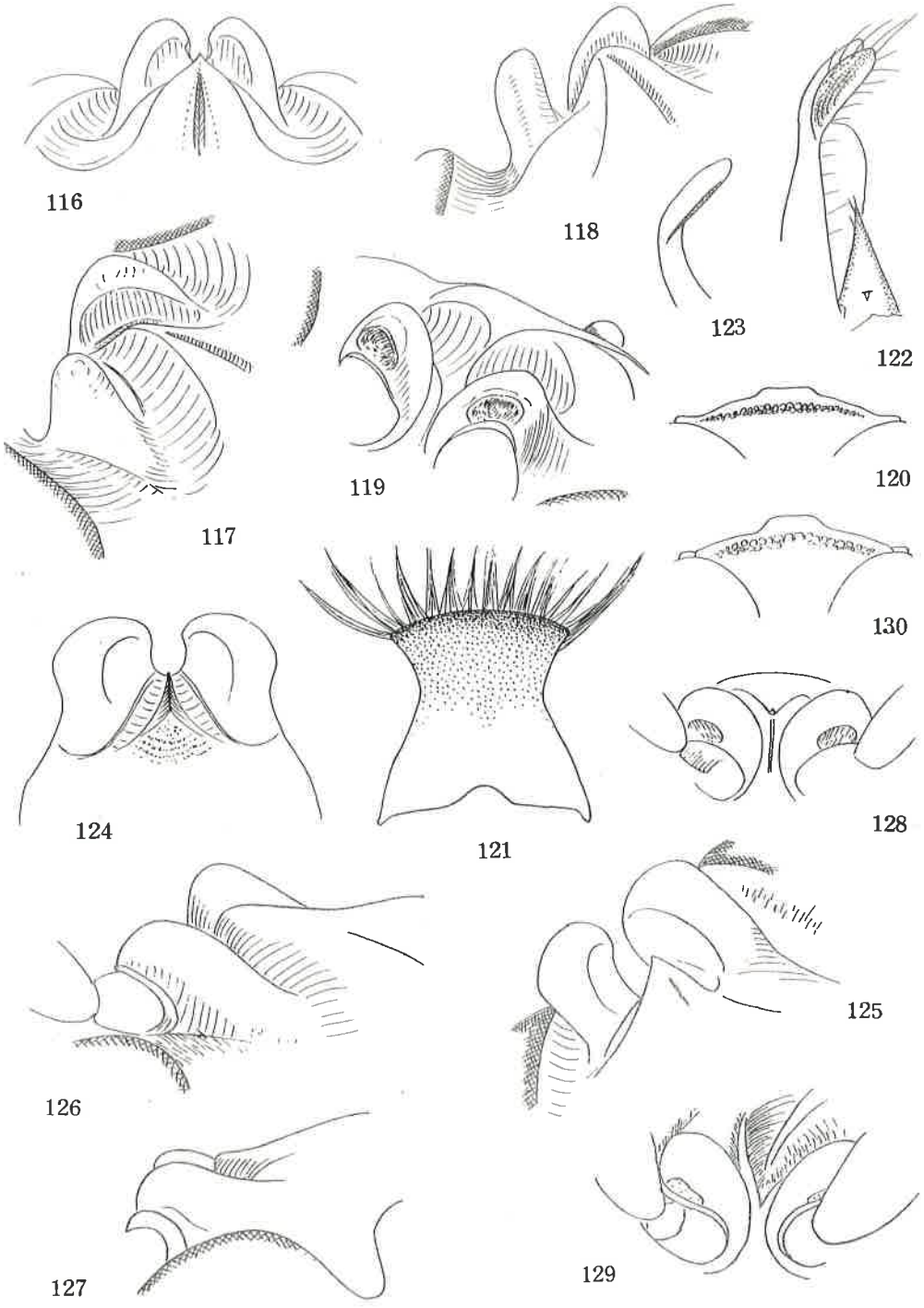
15. TRYPOXYLON LAEVICEPS TSUNEKI, 1976

Trypoxylon laeviceps Tsuneki, Steenstrupia (Copenhagen), 4 (6): 83, 1976 (♂, Is. Tawitawi, Philippines, figs.).
Trypoxylon laeviceps: Tsuneki, SPJHA, 12:22, 1980 (redescr. of ♂, descr. of ♀, figs.)

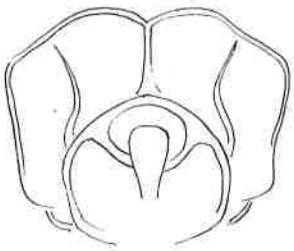
Specimens examined: 1 ♂ (holotype), Is. Tawitawi, Tarawakan, 24. X. 1961, Noona Dan Exp. (ZMUC); 1 ♀, Is. Busuanga, 4 km north of San Nicolas, 22. V. 1962, H. Holtmann (BPBM).

The discovery of the female of T. appendiculatum which is very close to the female of the present species has brought about a new question regarding the identification and sex-combination of this species. But the detailed study could confirm that the determination made in Pt. VI of the present paper with the Bornean female specimens is correct.

In connection with this the minute redescription of the male of laeviceps has be-



Figs. 116-132. Trypoxylon laeviceps Tsuneki
116-123 ... ♂. 124-132 ... ♀



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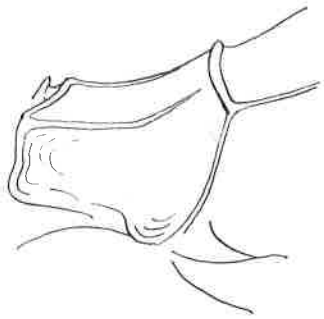

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come necessary, although main character of the sex was already given in some detail in Pt. VI with 11 figures.

Holotype ♂ (from Is. Tawi Tawi). Head thick, but not subquadrate, rather rounded in both frontal and dorsal views (Figs. 90, 91 of the original description), frons flat (Fig. 92, ditto), medial furrow comparatively broad and deep, deeper forwards and connected with that of SAT, surface on posterior half smooth and shining, with sparse fine punctules, SAT finely, very closely punctured, not shining, SAT-ASR: Figs. 116 (dorsal), 117 (latero-ventral), 118 (dorso-lateral to see through PAF) and 119 (ventro-lateral). SAT medianly longitudinally grooved, the groove widened backwards, dorsal surface fairly sharp triangle and acutely (down-curved in dorsal view) excavated on each side, ASR short column-like, but rather rounded as a whole in comparison with that of appendiculatum ♀, frontal aspect perpendicularly but roundly falling down, carrying a large but weak fovea below, close to upper margin of antennal socket (Fig. 119), PAF deep, broad, oval (nearly rounded) in cross section, scapal hollow markedly deep (Figs. 116, 118). Clypeus: Fgg. 120, medio-apical margin produced and truncate, nor emarginate or incised as in appendiculatum ♂.

HW,HL,IODv,A3,Al3,P=100,66,25,12,—,130. IODs=10:6. OOD,Od,POD÷2,9,6. A3=AW× 1.7. A3,4,5÷10,8,10. P,Ma,Mi,2(Ma),3(Ma)=100,19,10,48(22),48(30). The values are very similar to those of appendiculatum). RC=C, Rl=TCV×0.5. TCV:CV2÷5:6, TCV strongly bent in middle, CV1=CV2×2.7.

Collar thick, anterior part medianly roundly tuberculate, thence laterally markedly roundly swollen, lamina on side not marked, bluntly rounded, subalar area of mesopleuron with outer margin not edged (in some light condition appears to be edged, but really not edged, rounded in cross section). Propodeum with distinct lateral carinae, posterior part long extended posteriorly beyond baseof hind coxa, extended part at base somewhat constricted and transversely bordered with a carina (as in appendiculatum), from dorsal side of this carina runs a longitudinal carina till middle of GSR, GSR is an up-curved simple carina, not expanded and raised in lamella, area dorsalis medianly broadly furrowed, but lateral furrows indistinct, surface at basolateral areas obliquely, on the rest broadly transversely and coarsely, somewhat rugosely striate, side with up-curved dorsal carina (= lateral carina of dorsal aspect) running from spiracle till base of constricted part, thence turns vertically (cf. Fig. 132) as if an extension of the transverse carina of dorsal aspect; posteriorly extendet part of the segment transversely coarsely striate; although the part is considerably long its sternite is very short, confined to extreme base only and almost unobservable without removing gaster, the area is filled with white membrane.

Sternite 8: Fig. 121. Genitalia very similar to those of appendiculatum, left paramere and volsella in ventro-lateral view: Fig. 122, penis valve from the same direction: Fig. 123.

♀. As to this sex the detailed explanation was already given in Pt. VI of the present paper with the Bornean specimens. Among the Philippine specimens observed only one female was discovered. Here only the main characters are given:

General appearance is closely similar to that of appendiculatum ♀. The difference is rather slight:

(1) ASR more rounded on top (Figs. 124, dorsal; 125, dorso-lateral; 126, latero-ventral and 127, lateral).

(2) ASR bearing a very shallow (nearly flat and very slightly concave) fovea at base in front (Figs. 128, ventral; 129, latero-ventral).

(3) Upper portion of frons fairly closely and finely punctured.
(4) Mesoscutum finely, very closely punctured, with surface less strongly shining than in appendiculatum.
(5) The form of GSR in posterior view much more rounded (Fig. 131, cf. Fig.115).

Clypeus: Fig. 130. Posterior extended part of propodeum in lateral view: Fig. 132. Measurements of the Busuanga specimen: HW,HL,IODv,A3,P=100,63,24,15,150. IODs= 10:6.7. OOD,Od,POD÷1,10,7. A3=AW×3.3. A3,4,5=10,8,8. P,Ma,Mi,2(Ma),3(Ma)=100,20, 10,38(22),33(29). RC=C, Rl short, CV1=CV2×3.5, CV2÷TCV, angle about 110°. TCV bent at about mid point of its length.

ON TRYPOXYLON VICINUM TSUNEKI, 1979

Trypoxylon vicinum Tsuneki, SPJHA, 11: 15, 1979.
Trypoxylon laeviceps vicinum: Tsuneki, SPJHA, 12: 23, 1980.

Trypoxylon vicinum Tsuneki was described with 1 ♀ 2 ♂ specimens from West Java in Pt. V of the present paper. At the time of description the species was considered close to T. bilobatum m., but later it became clear that it was more closely related with T. laeviceps and in Pt. VI dealing with the Bornean specimens of this species it was sunk to a geographical race of laeviceps.

At present, however, when several closely allied species are found in the group of appendiculatum-laeviceps that will successively be treated it has become necessary that the status of laeviceps vicinum must be reconsidered. Comparative reinvestigation of the specimens of T. vicinum with other relatives has certainly brought to light several important characters hidden in this species which were sufficient enough to separate it from laeviceps and others at the species rank:

(1) ♂. ASR is not raised high above top of SAT (Figs. 138, lateral; 139, ventro-lateral).
(2) ♀ ♂. Subalar area of mesopleuron is distinctly acutely edged and slightly produced over subalar pit (when it was identified as a subspecies of laeviceps the latter was erroneously believed to have similar character).
(3) ♀ ♂. On frontal aspect of ASR there is a large distinct fovea (♀, Fig. 133, vertical, seen from back side; Fig. 134, ventral; 135, lateral; ♂, Figs. 138, lateral; 139, ventro-lateral).
(4) ♀ ♂. Frontal aspect of ASR at inner margin distinctly carinated (♀, Fig. 134; ♂, Fig. 139).
(5) ♀ ♂. GSR different in form from that of laeviceps (Fig. 136, cf. Fig. 131).
(6) ♂. In genitalia dorsal one of apical two lobes of paramere is distinctly shorter than ventral one (Figs. 141, right one; 142, left one, both in dorsal view).
(7) ♂. Sternite 8 different in the form of at least apical margin (Fig. 140, cf. Fig. 121).

On some other characters.

Propodeum with apical part markedly extended posteriorly beyond base of hind coxa, but the propodeal sternite not well developed (Fig. 137, from right side).
Penis valve simple at apex, without shoulder and sickle-shaped appendages (Figs. 143, dorsal view; 144, ventro-lateral view).

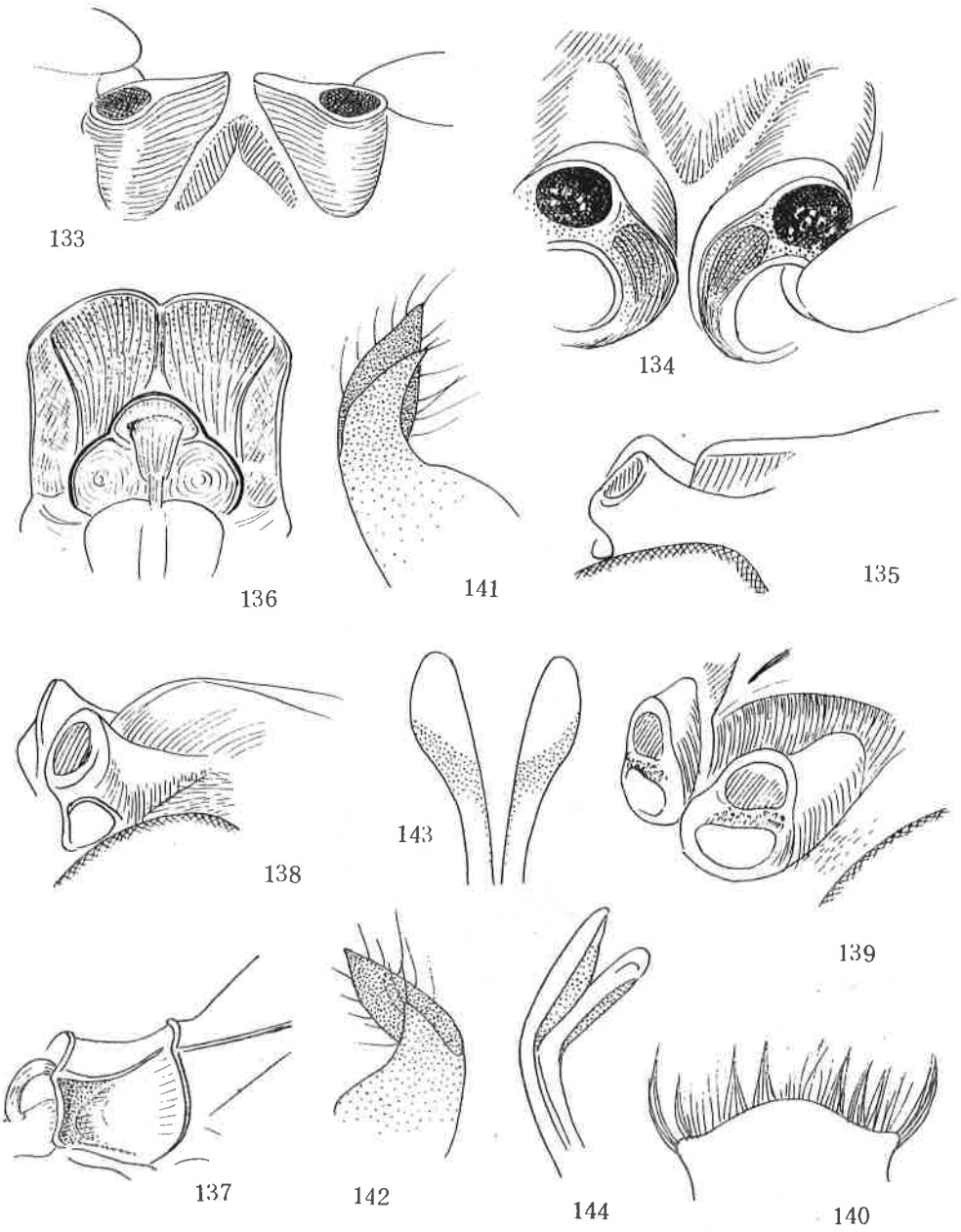
By the combination of the characters above mentioned vicinus can distinctly be separated from any of the closely allied relatives including the two that follow. Thus, T. vicinum has, after a confusion, recovered the status originally assigned to it.

This species is endemic to Java.

16. TRYPOXYLON BASILANENSE SP. NOV.

♂ ♀. Closely resembles appendiculatum, including general form of ASR, but differs from this in that subalar area is acutely edged on outer margin and slightly produced, ASR on inner side at base much more strongly excavated (Figs. 146, ♂; 151, ♀) and ventral one of apical two lobes of paramere of genitalia narrower than dorsal one (Figs. 149 and 150), with surface less strongly punctured and appears much smoother.

♂. Length about 6 mm. Black, mandible ferruginous, palpi brown, legs apically



Figs. 133–144. Trypoxylon vicinum Tsuneki. 133–137, ♀; 138–144, ♂.

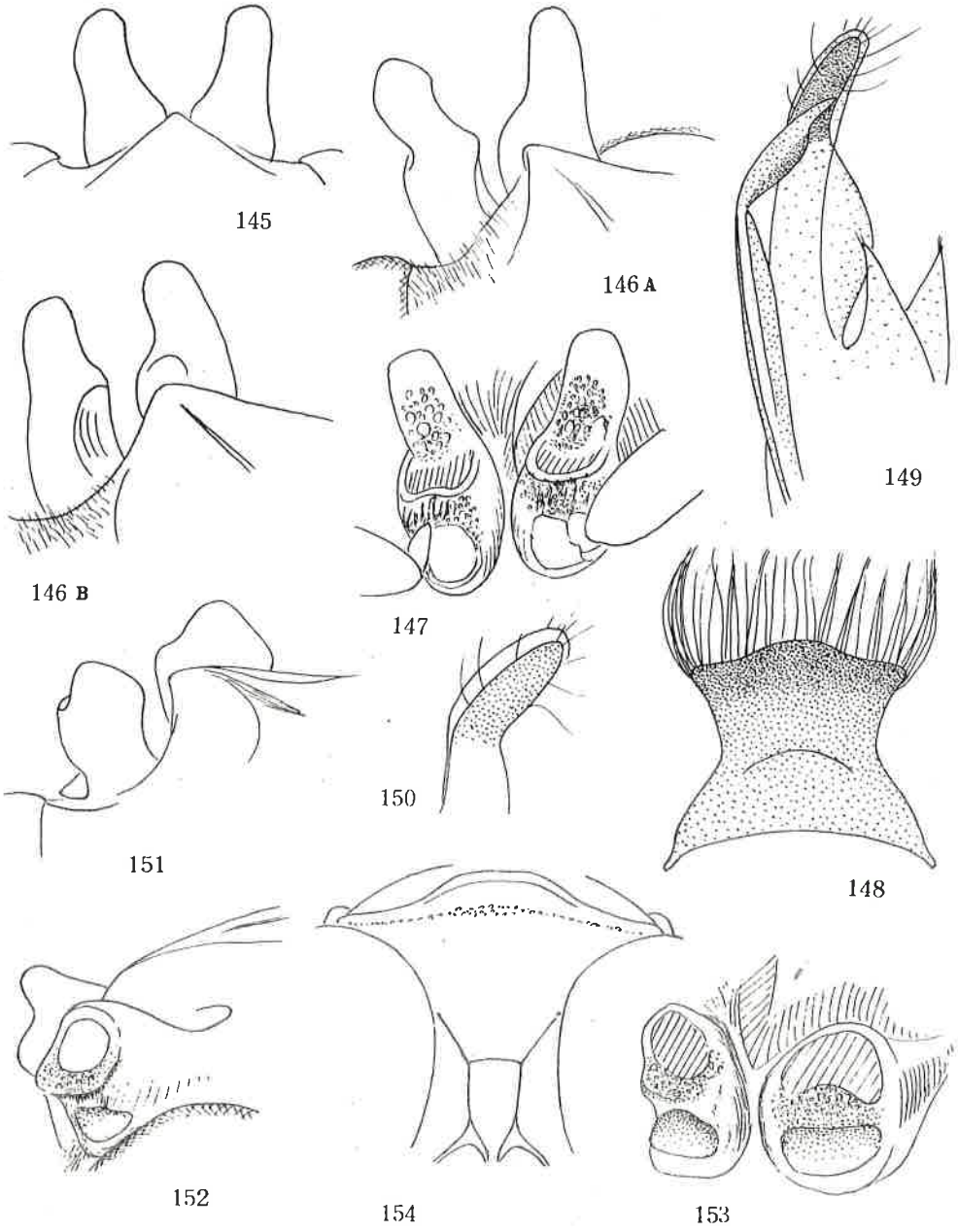
more or less brownish. Hair silvery.

Head in frontal view rounded, somewhat subquadrate, W:L=100:80, frons nearly flat and more acutely and narrowly furrowed in middle than in appendiculatum in which surface gradually inclined towards median line, eye incision comparatively broad and distinctly narrowed towards bottom, dorsal margins of the pair in a line.

HW,HL,IODv,A3,Al3,P=100,64,26,10,17,124. IODs=10:6.5 (=3:2). OOD,Od,POD=2,7,5. A3,4,5=10,9,10. A3=AW×1.6. Al3=HW×1.7 and = or slightly < All+12. P,Ma,Mi,2(Ma),3

(Ma)=100,21,10,46(22),48(26). RC=B, R1 short, CV1=CV2 2.5-2.7. TCV=CV2, TCV medianly bent, angle about 110 . In most of the Mindanao specimens OOD,Od,POD=1,5,3.

ASR in dorsal view: Fig. 145, somewhat more strongly divergent apically than in appendiculatum, in dorso-lateral view: Fig. 146,-A, in Mindanao specimens intero-dorsal excavation facing more posteriorly (Fig. 146-B), ASR in ventro-lateral view: Fig. 147. Antenna similar in form to that of appendiculatum, Al3 at base somewhat constricted, then roundly swollen and abruptly narrowed and pointed at apex; clypeus



Figs. 145-150. Trypoxylon basilanense sp. nov. 145-150, ♂; 151-154, ♀.

also similar to that of the compared species, medio-apical protuberance always more or less incised or emarginated in middle; pronotum, propodeum including the form of GSR in posterior view also similar in structure. Sternite 8 (Fig. 148) generally similar in form, but different in pattern of brightness, here markedly dark (? constant).

Genitalia also very similar to those of appendiculatum, detailed examination could reveal the slight difference that has been mentioned in the above comparative notes.

Punctuation and sculpture not showing specific distinctions, very similar to those of appendiculatum.

♀. 7.0-7.5 mm. Similar to ♂ in general, but the development of ASR is markedly different as in the compared species. ASR in dorso-lateral view: Fig. 151, in lateral view: Fig. 152, anterior aspect somewhat more laterally directing than in the compared species, in ventro-lateral view: Fig. 153. Clypeus: Fig. 154.

HW,HL,IODv,A3,P=100,66,24,13,126. IODs=10:6.3. OOD,Od,POD≒1,5,3. A3=AWx2.3. A3,4,5=10,8,9. P,Ma,Mi,2(Ma),3(Ma)=100,20,10,43(25),47(33).

Holotype: ♂, Is. Basilan, C. F. Baker (USNM).

Paratypes: 1 ♀, Basilan, C. F. Baker; 2 ♀ 3 ♂, Mindanao (1 ♀, Iligan; 1 ♀, Butuan; 2 ♂, Surigao, 1 ♂*, Butuan), C. F. Baker (USNM). * gaster is lacking.

Remarks. This species appears to be confined in distribution to the southern part of the Philippine Islands.

17. TRYPOXYLON SIBUYANENSE SP. NOV.

The present species is also very similar in appearance to T. appendiculatum, and was considered at first to be a local form of this species having slightly different ASR, but the examination of the genitalia and sternite 8 reveals that it belongs to a different species.

♂. 6.5 mm. ASR slightly shorter (but raised higher than top of SAT) and markedly narrowed towards apex and in dorsal view somewhat more widely divergent apically (Fig. 155), in lateral view (Fig. 156) more strongly inclined posteriorly and in frontal view with the fovea locating more upwards (Fig. 157, cf. Fig. 95). Apical margin of clypeus similar in form, but in holotype with medio-apical area truncate (in paratype weakly emarginate); antenna, pronotal collar, subalar area, propodeum (posterior part: Fig. 158 seen from posterior side to show the outline of gastral socket, Fig. 159 seen from left side) similar in structure. Fine and sparse punctures without microsculpture on upper half of frons and on mesoscutum also similar. Measurements:

HW,HL,IODv,A3,A13,P=100,64,26,11,16,124. IODs=10:6. OOD,Od,POD=1,10,6. A3=AW×2. A13=BW×1.7 and slightly shorter than A11+12, in form similar. P,Ma,Mi,2(Ma),3(Ma)=100,20,10,46(26),46(32). RC=B, R1 short, CV1=CV2×3, TCV≒CV2, angle about 120°.

Sternite 8: Fig. 160 (cf. Fig. 104), very characteristic in form and colour. Genitalia (Fig. 161) generally similar, but ventral one of apical two lobes of paramere slightly shorter and more strongly narrowed apically (Fig. 162) than in appendiculatum (Fig. 102) and outer ventral margin with two small hooks as given in Figure 161; still further, there is a slender and apically pointed appendage between base of inner margin of paramere and volsella as shown with an arrow in Figure 161. Penis valve (Fig. 163, dorsal view) and volsella (in Fig. 161) similar to those of the compared species.

♀, unknown.

Holotype: ♂, Is. Sibuyan, C. F. Baker (USNM). (Gaster is detached, apical part is dissected and both are glued on to a triangle card and attached to the pin).

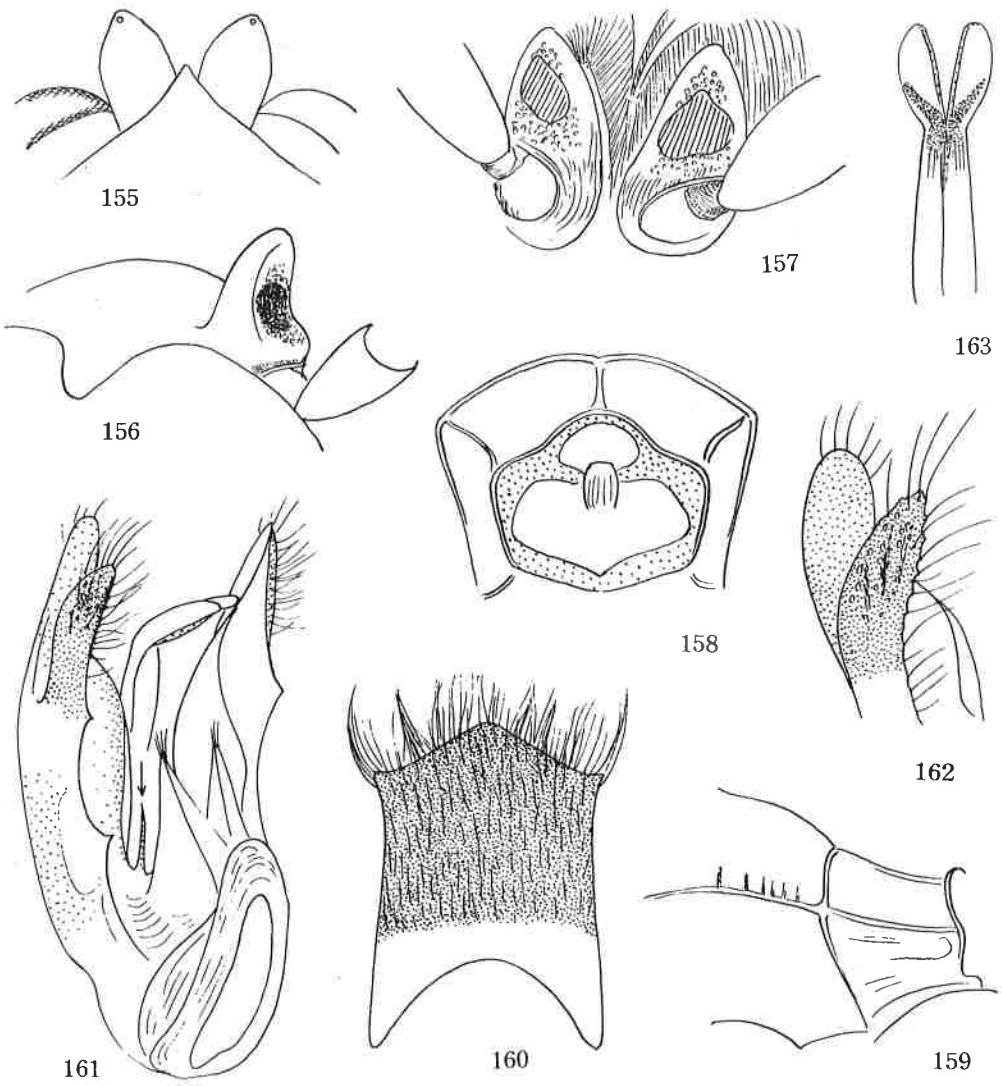
Paratype: 1 ♂, Is. Sibuyan, C. F. Baker (USNM) (Gaster is lacking).

18. TRYPOXYLON PALAWANUM TSUNEKI, 1976

Trypoxylon palawanum Tsuneki, Steenstrupia (Copenhagen), 4: 90, 1976 (♀, Palawan).

Specimen: 1 ♀ (holotype), Palawan, Pinigisan, 600 m, 8. IX. 1961, Noona Dan Exped. (ZMUC).

Main characters (♀): Length about 7 mm.



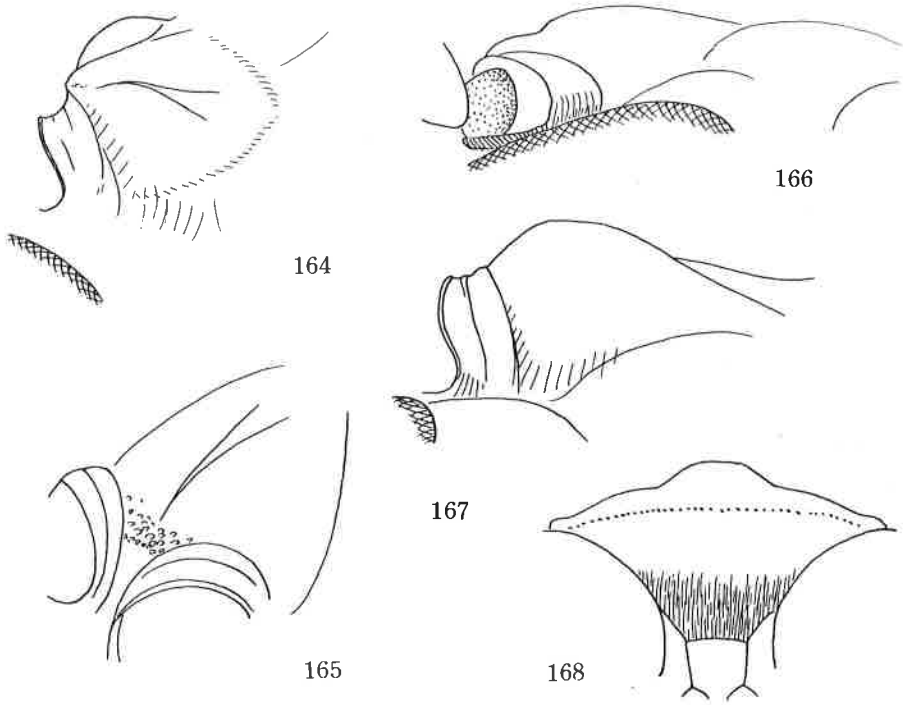
Figs. 155-163. Trypoxylon sibuyaense sp. nov., ♂

Colouration. Black; mandible, clypeus at apex, Al-2 beneath, tegula and basal plate of wing ferruginous; palpi, apices of coxae, trochanters (hind one partly brownish), fore tibia in front, base of mid tibia amber-yellow to white, rest of legs dark brown, partly somewhat paler. Gl-3 somewhat brownish beneath. Hair silvery, on clypeus parallel.

Structure. Head in frontal view (Fig. 109 of original description) rounded, W: L=100:90. Frons gently raised as a whole, broadly roundly and shallowly concave in middle, with a feeble bottom line in middle, SAT low short nasiform, or rather gently tectate as a whole, sides flat, medio-apical margin bluntly, rather indistinctly edged (the area coarsely punctured and verge not acute, the edge is the connected line of the puncture rims), SAT-ASR seen obliquely from above: Fig. 164, obliquely from beneath: Fig. 165, in profile: Fig. 166, in dorso-lateral view to see through PAF: Fig. 167, PAF is a simple line obliquely running down, surface of IAA smooth and shining, but not flat; clypeus: Fig. 168, disc nearly flat, apical glabrous area com-

paratively broad; occipital carina broadly indistinct behind buccal cavity.

HW,HL,IODv,A3,P=100,58,28,18,96. IODs=10:5.5. OOD,Od,POD=1,4,2. A3=AWx3.5. A3,4,5=10,7,6. P,Ma,Mi,2(Ma),3(Ma)=100,40,15,54(56),52(63). RC intermediate between B and C. Rl long, nearly as long as A3, CV1=CV2×4.5. TCV:CV2≒5:3, TCV very weakly sinuate, nearly straight. Angle about 110°.



Figs. 164–168. Trypoxylon palawanum Tsuneki, ♀

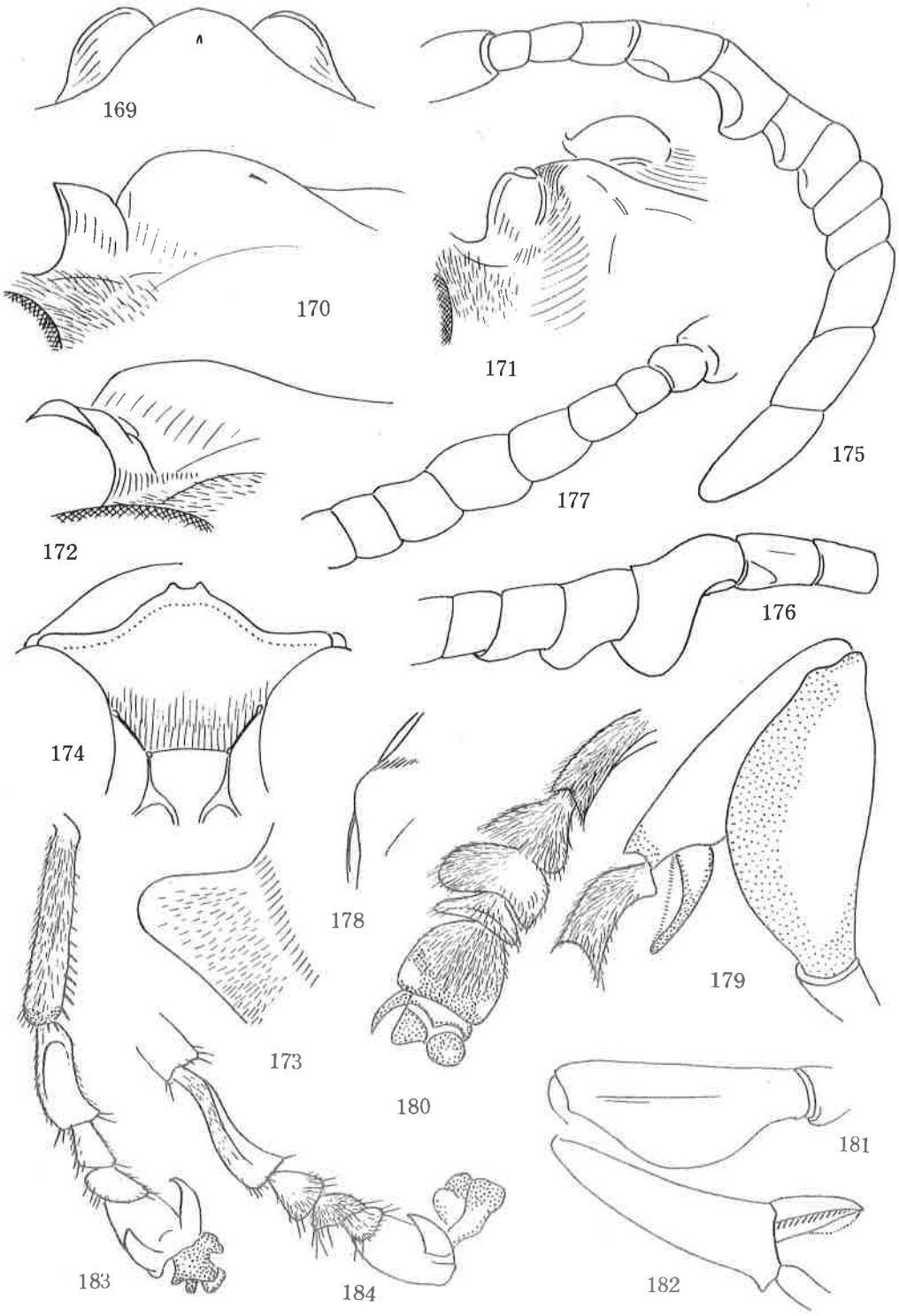
Pronotum with lamina on side rounded, not conspicuous. Propodeum with lateral carinae, but the carina obsolete on both ends, area dorsalis enclosed with broad and shallow groove, surface at base obliquely and coarsely, on median furrow transversely finely closely striate, the striae extended fainly on to discs, area apicalis with distinct lateral carinae, but widely open upwards.

Frons distinctly microcoriaceous and superimposed with fine punctures, PIS 1–1.5 times PD, mesoscutum similarly sculptured and punctured, but punctures somewhat closer, surface half mat.

Remarks. No other specimen of this species could be found among the specimen examined.

19. TRYPOXYLON FLETCHERI BAGUIONIS SSP. NOV.

(Trypoxylon fletcheri Turner, Ann. Mag. Nat. Hist., (9) 1: 363, 1917 (♀, India, Assam Shillong)
(Trypoxylon fletcheri: Tsuneki, SPJHA, 8: 67, 1978 (redescr. holotype)
(Trypoxylon fletcheri: Tsuneki, SPJHA, 9: 31, 1979 (♀, India, Malaya)
(Trypoxylon fletcheri: Tsuneki, SPJHA, 11: 21, 1979 (♀, Java).



Figs. 169-184. Trypoxylon fletcheri baguionis ssp. nov., ♂.

The Philippine race differs from the nominate one in that gaster and legs are broadly black:

♀. Black, brown are Al at apex, mandible largely, wing tegula, Gl at base, on sides and beneath (rarely Gl black above till base), fore tibia, fore and mid tarsi and spurs; sometimes fore tibia in front, mid tibial spur and hind trochanter partly ferruginous and for and mid tarsi somewhat paler. In ♂ legs are more broadly ferruginous than in ♀, yet largely black - see description.

Measurements of holotype of the new subspecies (♀): HW,HL,IODv,A3,P=100,50,26, 13,104. IODs=10:8.3. OOD,Od,POD=3,11,7. A3=AW×2. A3,4,5=10,10,10. P,Ma,Mi,2(Ma), 3(Ma)=100,31,14,48(54),47(68). RC=C, Rl moderate in length, shorter than CV2 and ÷ A3, CV1=CV×4, TCV:CV2÷3:2, angle very broad, about 150° (in others mostly 140-150°, in one specimen about 130°).

Description of hitherto unknown male:

Length 8.5-9.0 mm. Black, ferruginous are mandible (slightly dark and at extreme base black), palpi, wing tegula, Gl except posterior half above, fore femur except beneath, fore tibia except a brown streak in front, fore tarsus (pale yellow), mid femur above and in front, mid tibia except dark brown streak on inner and outer sides, mid tarsus (T2 and 5 partly dark brown), hind trochanter largely and all tibial spurs. Hair silvery, on clypeus parallel.

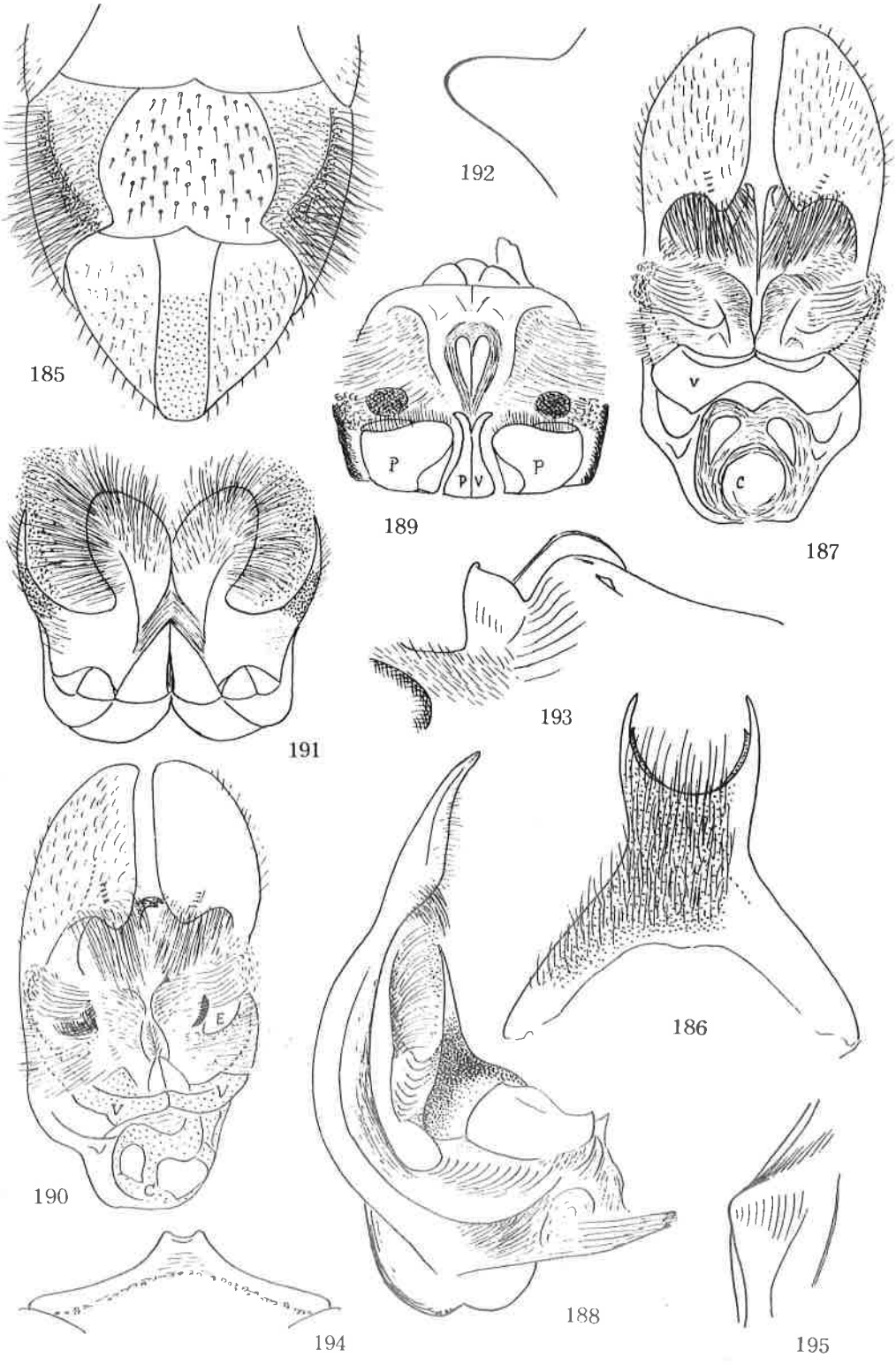
General structure and sculpture similar to those of ♀, but antenna and fore and mid legs show marked secual modification and sternite 6 also bears a pair of special hair tufts. Genitalia and sternite 8 very characteristic.

Head in frontal view with lateral margins rounded and slightly convergent towards clypeus, H:I=100:90, vertex not depressed, eye incision broad and shallow (Fig. 173), frons gently raised, without medial furrow, but broadly shallow excavated in middle, SAT broad rounded nasiform, rather tuberiform, in dorsal view: Fig. 169, in dorsolateral view: Fig. 170 or 171, in lateral view: Fig. 172, PAF shallow, with bottom line upcurved, ASR unicarinate at apical margin; clypeus: Fig. 174, disc medianly broadly roundly tectate, apical margin not reflected, antenna in posterior view: Fig. 175, A5,6,7,8 more or less excavated beneath, in A6 and 7 excavation marked, in frontal view: Fig. 176, in dorsal view: Fig. 177, A6 and 7 broader than others, A8-10 short and broad, while All-12 long, Al3 appr. 2.3 times as long as broad at base and appr. 1.5 times as long as Al2. Anterior part of collar medianly minutely tuberculate, posterior part discoloured, lamina on side: Fig. 178, subalar area with outer margin of posterior half acutely edged as usual and continued posteriorly to mesopleural flange but not expanded into pent-roof structure; propodeum with distinct lateral carinae, the carina disappeared far before apical margin, area dorsalis enclosed with very weak groove, median furrow moderate in width and slightly enlarged posteriorly, area apicalis only shortly margined on side, the area as a whole longitudinally raised (triangular in outline in dorsal view), glabrous, shining, not particularly expanded at posterior margin. Measurements: HW,HL,IODv,A3,Al3,P=100,50,27,10,26,108. IODs=10:9. OOD,Od,POD=2,5,4. A3=AW×1. Al3=BW×2.3. A3,4,5=10,11,16. P,Ma,Mi,2(Ma),3(Ma)=100, 30,14,50(5)),44(60). RC=B, Rl short, CV1=CV2×4.3. TCV:CV2÷5:4, TCV nearly straight, angle about 130°.

Fore femur and tibia in posterior view: Fig. 179, femur markedly incrassate and tibial spur margined on inner side with transparent membrane, fore tarsus in vertical view: Fig. 180, strongly enlarged, flattened and pale yellow in colour. Mid femur in posterior view: Fig. 181, -tibia(ditto): Fig. 182, spurs thick and deeply excavated on inner side, -tarsus (ditto): Fig. 183, in lateral view: Fig. 184, Tl enlarged, excavated beneath and sinuate, hind leg normal. Apical part of gaster seen from beneath: Fig. 185, sternite 8: Fig. 186, very strange in form, especially in that apical horns are accompanied each with a second horn closely attached inside.

Genitalia are also very strange, in ventral view: Fig. 187, lateral view: Fig. 188, apical view: Fig. 189 and latero-apical view: Fig. 190 (E, empty space; V, volsella). Paramere at apical half enlarged, covered with hair on ventral surface and provided with a series of 4 short teeth, volsella densely covered with various sets of hair and the skeleton can not be observed, when shematically given the form seen vertically: Fig. 191 (consider tha true feature of volsella by combining this with that of Fig. 188). Penis valve simply attenuate apically, without shoulder and pair of sickle-shaped appendages.

Frons distinctly microcoriaceous and closely and distinctly superimposed with fine punctures, mesoscutum with weak microsculpture, punctures close, surface fairly shining; propodeum at base and on disc nearly smooth, median furrow transversely and finely closely striate, striae posteriorly weak, lateral furrows very feebly indistinctly striate, series of striae along lateral carinae of the segment not strong, in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some light only observable, posterior inclination covered closely with hair-bearing punctures, sides on dorsal half except posterior portion obliquely comparatively strongly striate, partly mixed with punctures.

Holotype: ♀, Luzon, Baguio Benguet, C. F. Baker (USNM).

Allotype: ♂, Luzon, Mt. S.Thomas, 6500 ft. near Baguio, 4. IV. 1953, H., M. and D. Townes (AEI).

Paratypes: 3 ♀, same data as holotype (USNM); 8 ♀ 11 ♂, Luzon, Mt. S.Thomas (1 ♀ 2 ♂, 6500 ft. 23. XI. 1952; 4 ♀ 2 ♂, 6500 ft. 27-28. XII. 1952; 3 ♀ 7 ♂, 6500 7300 ft. 3,4. IV. 1953, H., M. and D Townes (AEI); 4 ♀, Luzon, Mt. Data, 7800 ft. 1. I. 1953, Townes family (AEI); 1 ♀, Mindoro, Ilong, Mt. Halcon, 4500 ft. 7. V. 1954, M. and D. Townes (AEI); 1 ♂, Luzon, Mines View Park, 1500 m, Bagui, 1. I. 1980, T. Murota (Coll. Murota).

Remarks. As to the colour variation of the present species I already gave some comments on the Malayan and Javanese specimens. In the latter a marked difference is present between the specimens from West- and East Java, the former being nearly typical and the latter strongly melanic. The latter may be a local race, but the determination was reserved because of the scanty material. The Philippine specimens of the present species are much more broadly and strongly melanic than the East Javanese one and the specimens are sufficient enough to show the constancy of the colouration.

Of the specimens 3 ♀ from Mt. Data and 2 ♂ from Mt. S.Thomas have the gastral petiole completely black above, but on sides and beneath distinctly ferruginous, in the female specimen from Mindoro (Mt. Halcon) mid and hind tibiae broadly brown on inner side.

In the non-sexual characters the female is similar to the male, but eye incision is much narrower (Fig. 192, cf. Fig. 173). SAT in dorso-lateral view: Fig.193, clypeus similarly bidentate at apex in middle, but more strongly produced anteriorly than in ♂ (Fig. 194), lamina on side of pronotum: Fig. 195.

20. TRYPOXYLON LUZONENSE SP. NOV.

The present species resembles considerably well the preceding species, but can be distinguished therefrom by the structure of SAT, by the punctuation or sculpture of mesopleuron and propodeum and by the colouration of the legs.

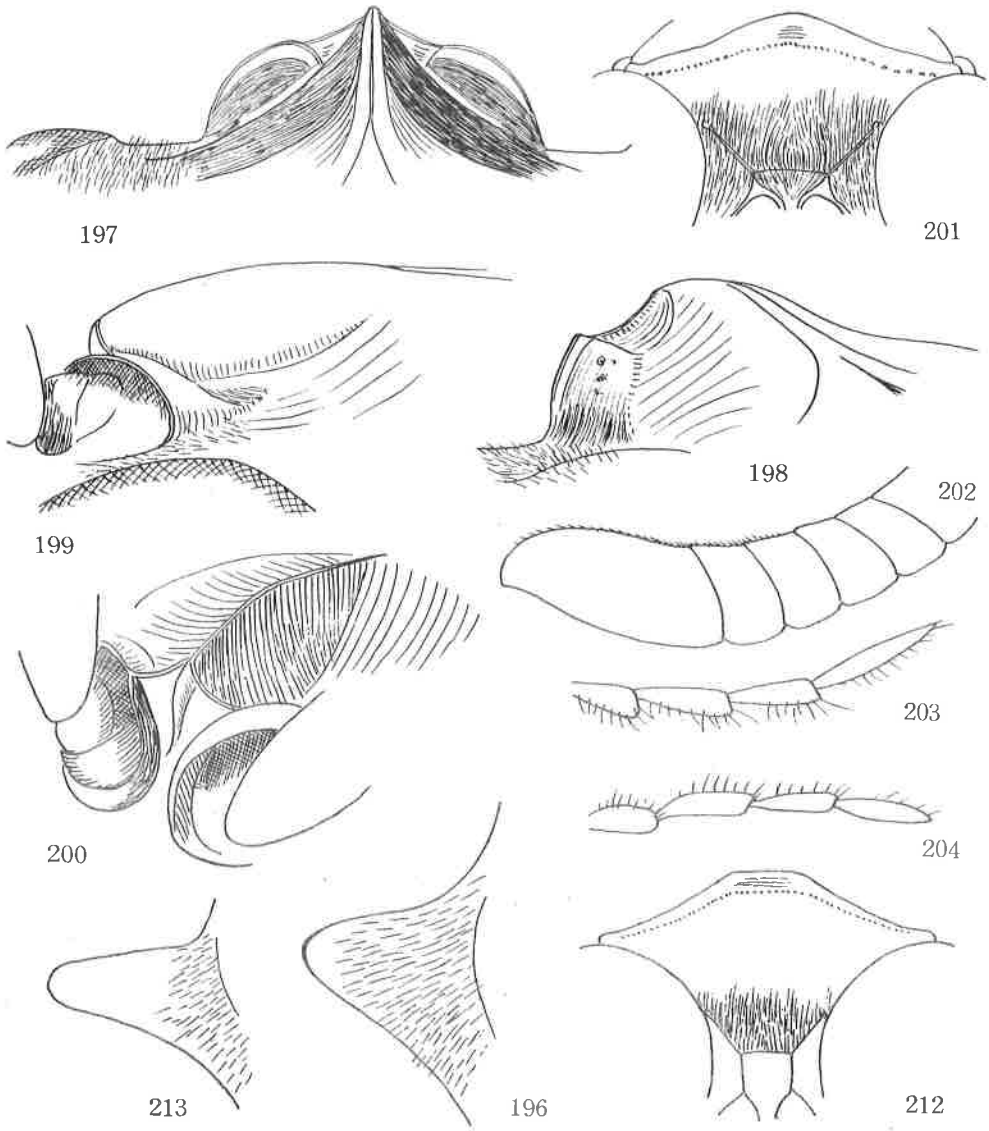
♂. Length 7 mm. Black; mandible except base shining dark brown, palpi lustreless dark brown (gaster and antenna completely black), fore tibia with apical spur pale brown (outer side slightly dark), mid tibia similar, but as a whole somewhat darker brown, hind tibia at base also brown; fore Tl, basal half of mid and hind Tl and mid T5 whitish ferruginous; fore Tl-4 brown, rest of mid and hind tarsi nearly black. Hair silvery.

Head in frontal view with sides rounded, slightly convergent towards clypeus, W: L=100:86, vertex not depressed, eye incision broad nnd shallow, strongly convergent towards bottom, bottom minutely rounded and dorsal margin distinctly inclined outwards (in fletcheri baguionis dorsal margin nearly horizontal, only apical portion roundly inclined) (Fig. 196, cf. Fig. 173); frons gently raised, surface nearly flat and broadly shallowly concave on lower portion (similar to fletcheri baguionis), but SAT distinctly nasiform, long carinated in middle, with sides obliquely inclined, apex much higher than ASR and connected with this with a transverse and obliquely inclined carina, separating PAF from IAA, ASR not widely expanded anteriorly as in the compared species. SAT-ASR in dorsal view: Fig. 197, in dorso-lateral view: Fig. 198 (cf. Fig. 170), in lateral view: Fig. 199 (cf. Fig. 172), in latero-ventral view: Fig. 200. Clypeus: Fig. 201 (in ♀ Fig. 212, also eye incision in ♀: Fig. 213).

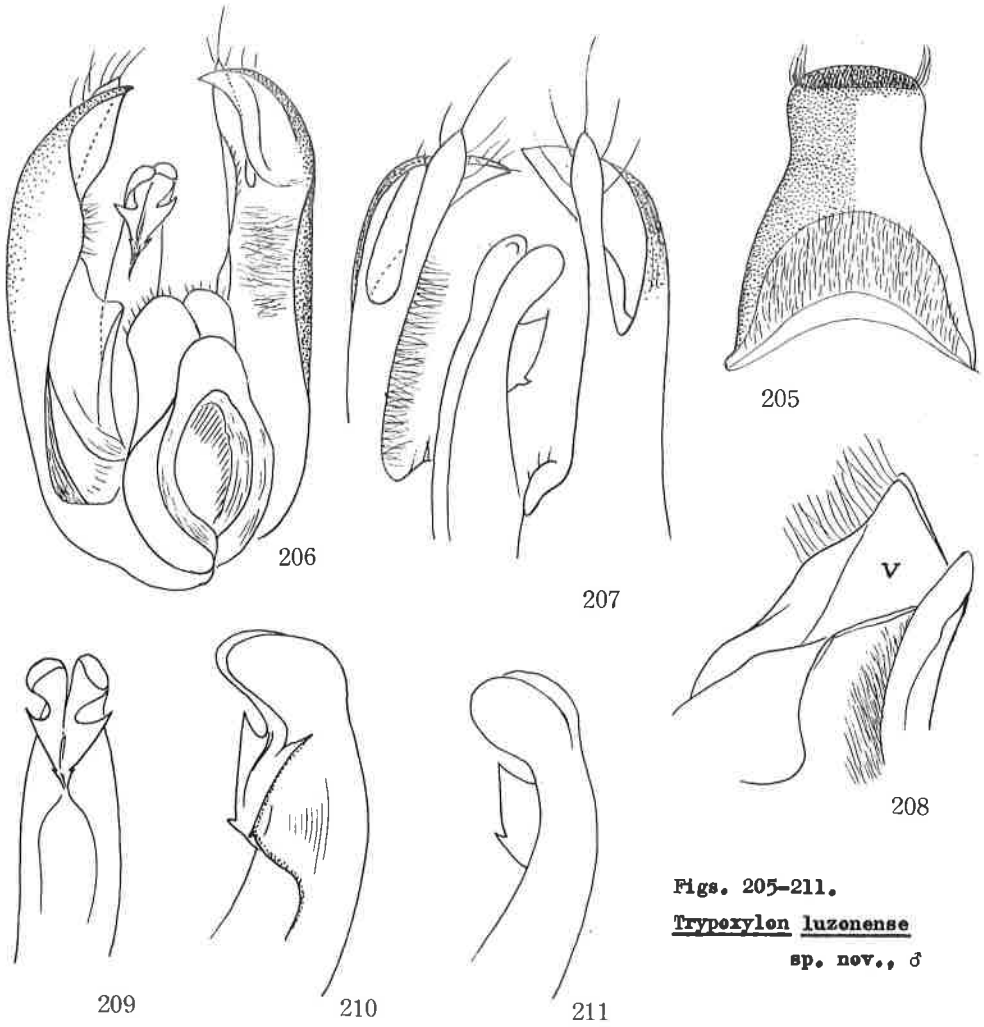
HW,HL,IODv,A3,Al3,P=100,55,34,20,24,94. IODs=10:8. OOD,Od,POD=1,2,2. A3=AW× 3. A3,4,5÷10,7,5 (A6-9 relatively 5,4,3.5,3). Al3÷BW×2 and ÷A9-12. P,Ma,Mi,2(Ma), 3(Ma)=100,28,14,50(49),54(62). Antenna markedly thickened towards apex, A3-7 gradually shortened apically and A7-12 subequal in length, without excavation on any joint, A8-13: Fig. 202. RC=B, Rl short, about half the length of TCV, CV1=CV2×2.5, TCV:CV2=5:6, TCV nearly straight, CV2 gently down-curved, angle about 110°.

Occipital carina unobservable on head beneath, maxillary palpus different in the relative length of ultimate joint from fletcheri (Fig. 203, cf. Fig. 204 in fletcheri baguionis). Pronotal collar transverse, anterior part narrow, ridge-like, posterior part wider, not discoloured, apical marginal area only somewhat brownish, lamina on side very similar in form to that of fl. baguionis. Structure of subalar area and of

meso- and metapleural flanges also similar. Propodeum with distinct lateral carinae, becoming weak and indistinct apically, area dorsalis enclosed with shallow fine furrow, medial furrow broad and deeper posteriorly, posterior inclination as long as dorsal aspect, area apicalis with only lateral carinae, highly raised, parallel-sided, but anteriorly not curved to form dorsal margin, the carinae are independent of the lateral carinae of thw segment, GSR broad, smooth, up-curved, but not roundly expanded posteriorly. Sternite 8: Fig. 205, strange in the state of pubescence at apical margin. Genitalia seen obliquely from beneath: Fig. 206, paramere bifid at apex into two lobes, subequal in length, but dorsal one narrower (Fig. 207, dorso-lateral), both sparsely fringed with hair, main body of paramere expanded on inner margin into lamella and ventral surface of apical part before bifurcation densely covered with



Figs. 199-203 (♂), 212-213 (♀). Trypoxylon luzonense sp. nov.
(Fig. 214 ... T. fletcheri)



Figs. 205–211.
Tryporylon luzonense sp. nov., ♂

pubescence (Figs. 206 – ventro–lateral view, 207 –dorso–lateral view), volsella wide and short (Figs. 206, 208 – left one from left side), with apical and dorsal margin fringed with hair, penis valve strange in structure, especially in regard to primitive (?) sickle appendages: Figs. 206, 209 (almost ventral), 210 (ventro–lateral) and 211 (dorso–lateral), 207 (do.).

Frons distinctly microcoriaceous and closely superimposed with fine punctures, lateral inclinations of SAT also punctured, but without microsculpture, mesoscutum distinctly microcoriaceous and densely covered with fine punctures, mesopleuron also microcoriaceous and somewhat more sparsely punctured than on scutum, on epimeral area microsculpture very weak and punctures very fine and very sparse (in fletcheri with-microsculpture on mesopleuron). Propodeum with series of striae along lateral carinae, area dorsalis as base obliquely, on the remaining areas transversely finely closely striate, striae on median furrow strong and on discs weak and on the latter closely mixed with punctures, outside the area and posterior inclination closely covered with fine hair–bearing punctures, sides obliquely finely closely striate, except ventro–anterior weak femoral sinus.

♀. Similar to ♂ in general except sexual characters.

Body larger, 9.5–10.0 mm. Gastral petiole ferruginous (legs similar in colour to ♂), antenna less strongly incrassate apically, with joints except ultimate one longer and without modification, clypeus somewhat more strongly produced anteriorly and more distinctly truncate at medio–apical margin (Fig. 212), IODc much narrower, eye inci-

sion deeper, narrower, with convergency towards bottom weaker, but the outward inclination of dorsal margin similar (Fig. 213), area dorsalis on propodeum much less punctured, simply finely closely striate and in fore wing angle between TCV and CV2 somewhat larger. Measurements (within parentheses ... Baker's specimen):

HW,HL,IODv,A3,P=100,56,31,20,110 (100,56,31,21,110). IODs=10:5 (10:5.3). OOD, Od,POD=1,3,2 (2,7,5). A3=AWx3.3 (do.). A3,4,5≒10,7,6 (do.). P,Ma,Mi,2(Ma),3(Ma)= 100,27,13,50(40),50(56) (100,24,13,50(42),53(52). RC=B. Rl short, CV1≒CV2×4 (3.5). TCV:CV2≒5:4 (do.), angle about 120° (do.).

SAT-ASR similar to that of ♂, clypeus: Fig. 212, disc medianly roundly tectate, eye incision: Fig. 213, pronotal lamina similar.

Holotype: ♂, Luzon, Baguio, Mines View Park, 26. III. 1978, T. Tano (Coll. Tano).

Paratypes: 1 ♀, Luzon, La Trinidad, 4-5. IV. 1968, M. D. Delfinado (BPBM); 1 ♀, Luzon, Mt. Banahao, C. F. Baker (USNM); 1 ♂, Luzon, Mt. S. Thomas, 6500 ft., near Baguio, 4. IV. 1953, Townes family (AEI); 1 ♀, Negros, Mt. Canlaon, 3600 ft., 8. V. 1953, H., M. and D. Townes (AEI).

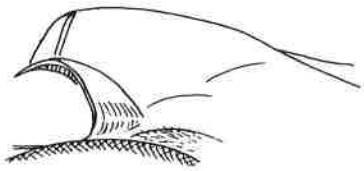
Remarks. The present species resembles in appearance T. fletcheri baguionis, but in phylogenetic it is remotely separated from this. The fact is clearly shown by the difference in the structure of the male genital organs.

In the specimen from Mt. Banahao Tl of mid and hind legs except apex broadly ferruginous, while in that from La Trinidad basal 2/3 whitish.

Trypoxylon luzonense nigrum ssp. nov.

A female specimen from Mindanao differs from those of Luzon and Negros in that the gaster and legs are completely black (fore tibia in front and fore Tl somewhat brownish). Anterior margin of clypeus more distinctly recurved (Fig. 217). SAT-ASR similar (Figs. 214 - lateral, 215 - ventro-lateral, 216 - dorso-lateral).

Measurements: HW,HL,IODv,A3,P=100,53,31,22,116. IODs=10:5.5. OOD,Od,POD=1,4, 3. A3=AWx3.3. A3,4,5=10,7.5,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,24,12,48(26),47(44). RC= B, Rl short, CV1≒CV2×4, TCV:CV2≒3:2. TCV gently in-curved, angle about 120°.



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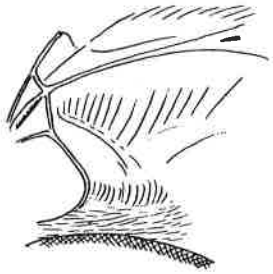

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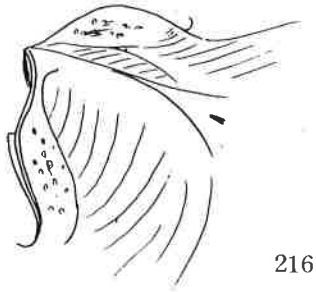

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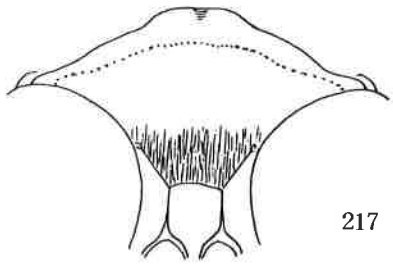


217

♂, unknown.

Holotype: ♀, Mindanao, Zanboanga del Norte, Masawan-Gundawan, 1260-1350 m, rain forest, 3. VII. 1958, H. E. Milliron (BPBM).

21. TRYPOXYLON SCAPOSUM SP. NOV.

The present species (♀) is closely related to T. luzonense and in having the black gaster and largely black legs very similar to its Mindanao subspecies, nigrum, but differs from it in some details in characters as given below. Moreover, it occurs in sympatric with luzonense and there is no doubt that it belongs to a different species.

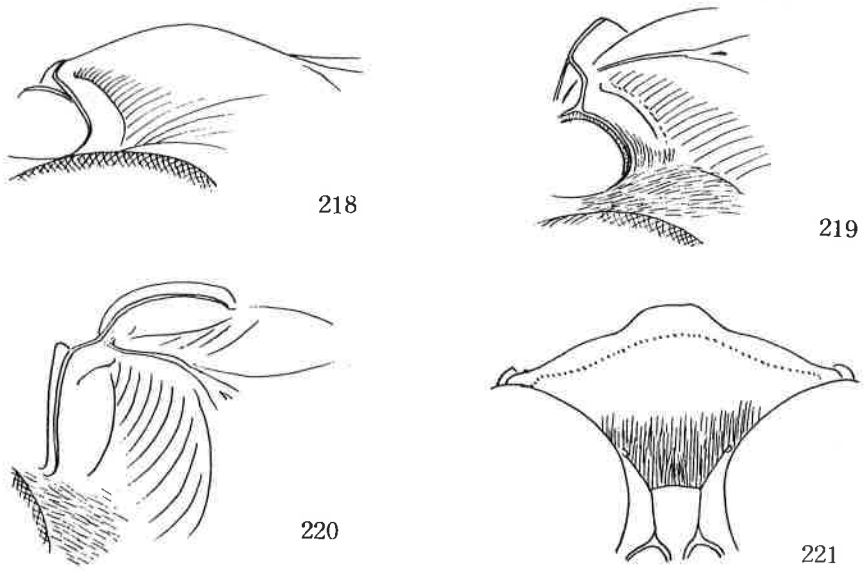
The differences from T. luzonense nigrum:

(1) SAT-ASR. General form and structure similar. But lateral inclinations of AST less acute, medial carina on top of SAT not extended across anterior transverse carina to IAA (Figs. 219 -latero-vertical, 220 dorso-lateral, cf. Figs. 215, 216 in nigrum); ASR nearly as high as SAT (Fig. 218 - lateral, cf. Fig. 214 where SAT raised much higher above upper level of ASR); anterior transverse carina medianly depressed (Fig. 220, cf. Fig. 216).

(2) IAA. Medial carina sometimes present, sometimes absent, even when present it is not strong, rather vestigial (in nigrum always very strong and marked).

(3) Medio-apical prominence of clypeus narrower and more abruptly and angulately produced (Fig. 220, cf. Fig. 217).

(4) Colouration. A1 and 2 broadly bright ferruginous beneath, fore and mid tibiae considerably broadly ferruginous except inner and outer sides, fore T4 and 5 and mid T5 also considerably ferruginous. In nigrum antenna and legs black, only fore tibia in front and fore T5 somewhat brownish.



Figs. 218-221. Trypoxylon scaposum sp. nov., ♀

Measurements of holotype:

Head in frontal view with ratio of W:L=100:90 (lateral margins rounded and very slightly convergent towards clypeus). HW,HL,IODv,A3,P=100,52,26,18,110. IODs=10:6. OOD,Od,POD=2,9,5. A3=AW×3.6. A3,4,5,8,11,12=10,7,6,5,4.5,10. P,Ma,Mi,2(Ma),3(Ma)= 100,32,14,50(50),46(55). In fore wing RC=B-C, R1 fairly long, ≒A5 or ≒CV2 (in luzonense much shorter than CV2), reaching fairly close to wing apex, CV1≒CV2×4, TCV:CV2 ≒5:3, TCV nearly straight, angle about 120°.

Measurements show that IODv is relatively much narrower than in luzonense nigrum (cf. values on p. 49). Further measurements with other specimens, namely HW:IODv=100: 25,25,27,26,26, confirm the stability of this character and we can add it to the characters of the species.

♂, unknown.

Holotype: ♀, Negros, Mt. Canlaon, 3600 ft, 29. IV. 1953, H., M. and D. Townes (AEI).

Paratypes: 4 ♀, the same place as holotype, 2, 7, 8, 8. V. 1953, H., M. and D. Townes (AEI); 1 ♀, Mindanao, Ilong Mt. Halcon, 4500 ft, 11. V. 1954, M. and D. Townes (AEI).

Remarks In sculpture generally similar to luzonense nigrum. Microsculpture on frons and mesoscutum distinct and distinctly and closely superimposed with fine punctures; propodeum at base obliquely coarsely, on median furrow transversely finely and closely striate, but the striae are usually finer and weaker than in nigrum , disc finely sparsely punctured, sometimes mixed with feeble striae that are extended from median furrow. Sides almost completely smooth and polished (in nigrum on dorsal half obliquely strongly closely striate).

22. TRYPOXYLON KOLAMBUGANUM SP. NOV.

Diagnosis. ♂ 9 mm. Fore tibia wholly, mid and hind tibiae partly and all tarsi ferruginous, IODs=10:7, A3=AW 2.7, Al3=A9-12, SAT nasiform, with sides acutely inclined, with top comparatively thick, PAF very deep, flat-bottomed, clypeus rounded out, subalar area normal, propodeum with lateral carinae, area dorsalis with shallow weak lateral furrows, microsculpture on mesoscutum very weak, only under high magnification defined, RC=B.

Black; ferruginous are mandible, palpi, fore tibia wholly, mid tibia at base and apex, hind tibia at base; rest of mid tibia, mid and hind T5 and arolia brown, Al and 2 at each apex, tegula and basal plates of wing also brown. Hair silvery, on clypeus parallel.

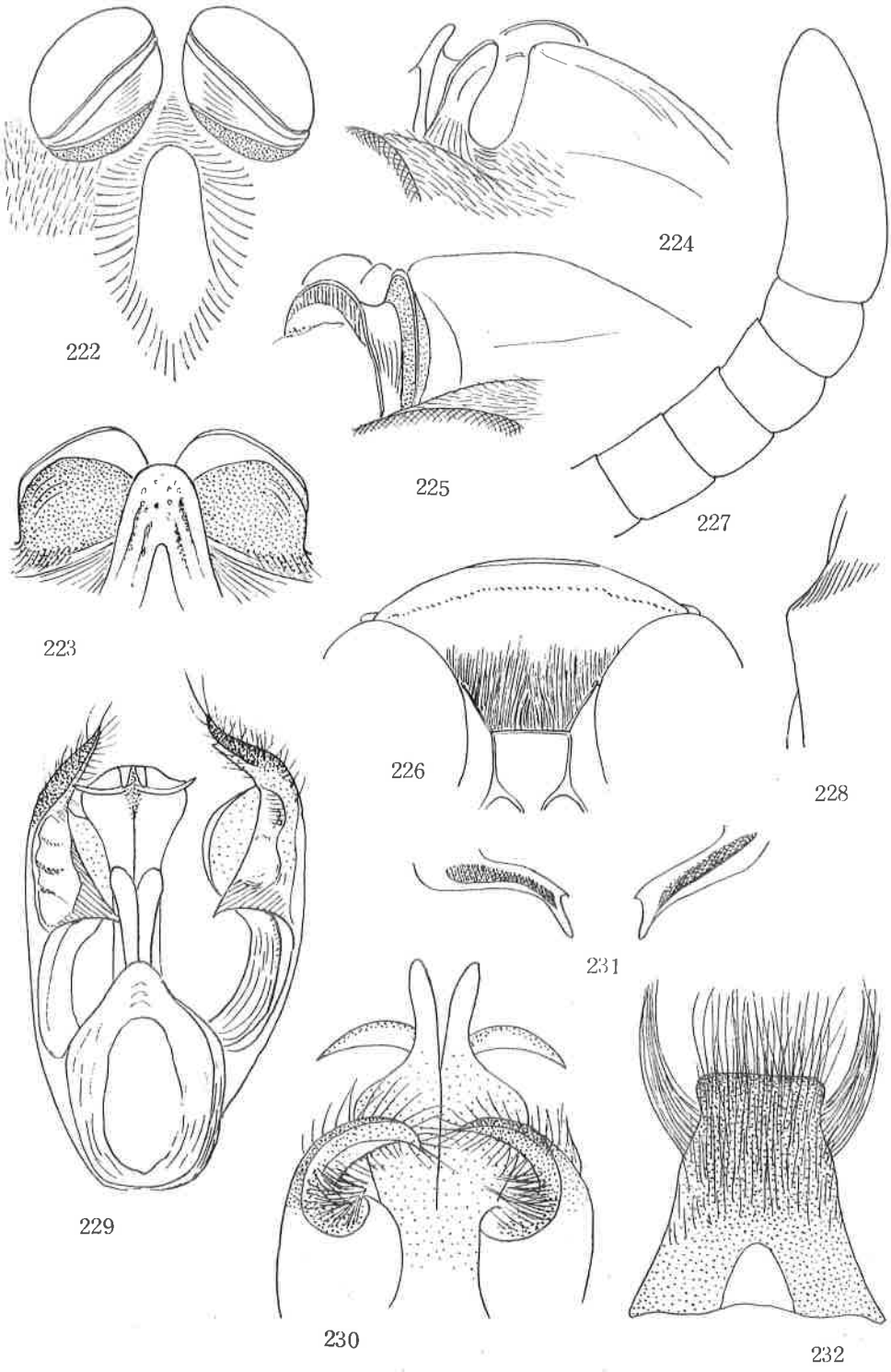
Head in frontal view with sides rounded, very slightly narrowed below, W:L=100: 82, vertex not depressed, eye incision narrow and narrowed towards bottom, dorsal margin slightly inclined outwards; frons gently roundly raised on both sides of medial furrow, SAT nasiform, median ridge comparatively broad and high, surface shining, with a few minute punctures scattered, sides acutely inclined, PAF very deep, flat-bottomed, U-shaped (somewhat oval) in cross section, ASR highly raised, as high as SAT, bicarinate, carinae thin and high, lobiform, not parallel to each other, anterior one rounded and pale brown, posterior one subtriangular and black (Figs. 222 - vertical, 223 - dorsal, 224 - dorso-lateral, 225 - lateral). Clypeus: Fig. 226.

HW,HL,IODv,A3,Al3,P=100,50,25,15,25,98. IODs=10:7, OOD,Od,POD=2,7,4. A3≒AW x 2.7. A3,4,5≒10,7,6. Al3=HWx2.8 and ≒A9-12. P,Ma,Mi,2(Ma),3(Ma)=100,30,12,40(40), 46(55). In fore wing RC=B, Rl short, CV1≒CV2x5, TCV:CV2≒3:2, angle about 95°. TCV in-, CV2 down-curved, both gently so.

Antenna without excavation on any joint beneath, A8-13: Fig. 227, occipital carina complete, minutely incised behind buccal cavity. Collar transverse, anterior part very narrow, almost not incrassate laterally and minutely roundly raised in middle, posterior part half-discoloured, in some light appears brownish, lamina on side: Fig. 228; propodeum with lateral carinae, originating behind spiracle, but ending far before apex, area dorsalis enclosed with feeble furrow, median furrow moderate in width and depth, only slightly widened towards apex, area apicalis enclosed with carina, but the carina interrupted at dorsal middle with the apical part of medial furrow of posterior inclination; GSR obliquely roundly elevated at posterior margin, brown in colour.

Genitalia of common form (Fig. 229, ventral), paramere simple at apex (Fig. 230, dorsal), but apical area longitudinally excavated on inner (ventral) surface, with a short process before apex of ventral margin (Fig. 231, vertical view) and in some direction appears as if two layers closely overlapped (cf. Fig. 229), outer ventral margin of main body of paramere triangularly produced inwards (Fig. 229) and inner margin expanded into lamellate and half rolled ventrally; note-worthy is that the lamellate area is very narrow and confined to apical part only. Sternite 8: Fig. 232, characteristic is the long hair at apical margin, the hairy area is not confined to the apical margin only, but covering apical half of outer (ventral) side of the sternite.

Frons distinctly microcoriaceous and closely superimposed with fine punctures, surface half mat, mesoscutum weakly microcoriace us and very sparsely finely punctured, surface fairly shining. Propodeum with distinct series of striae along lateral carinae, striae extended inwards, becoming finer and closer, covering whole the space



Figs. 222-232. Trypoxylon kolambuganum sp. nov., ♂

outside area dorsalis, the area also finely and closely striate, at base obliquely and on the rest transversely so.

♀, unknown.

Holotype: ♂, Mindanao, Kolambugan, C. F. Baker (USNM).

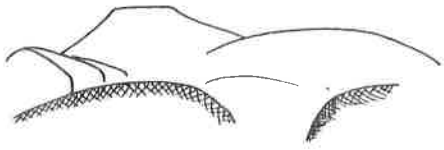
23. TRYPOXYLON VARIPUNCTATUM SP. NOV.

Diagnosis. ♀, 12-13.5 mm. Gl flask-shaped, hair golden, gaster except Gl and fore and mid legs largely ferruginous, SAT tuberiform, PAF down-curved in cross section, apical margin of clypeus rounded, collar black, subalar area without pent-roof structure, propodeum without lateral carinae, mesoscutum with microsculpture, but sometimes faint, RC=B-C.

Black, antenna and legs brown to dark brown; ferruginous are Al with basal condyle, A2, parts of 3, mandible (apically reddish), mouth parts, discoloured posterior part of collar, tegula and basal plates of wing, apex of Gl, G2-6 except dusky marks above, fore and mid legs except coxae, part of trochanters, often part of femora and arolia and the following parts of hind leg: base of tibia, shorter one of spurs and tarsus from apex of T1 to T5 except arolium (see remarks also). Hair golden on frons and clypeus, silvery or silky white on temple and thorax-complex, on clypeus parallel.

Head in frontal view with sides rounded, slightly narrowed below, vertex slightly depressed, W:L=100:82, eye incision narrow and deep, somewhat narrowed towards bottom, frontal elevations fairly marked and roundly inclined towards medial line which is shallowed and enlarged anteriorly, SAT tuberiform, with distinct median carina and smoothly inclined to IAA, ASR obliquely raised antero-laterally, PAF shallow and broad, simply down-curved in cross section, the structure in lateral view: Fig. 233, in dorso-lateral view to see through PAF: Fig. 234; clypeus: Fig. 235, disc broadly, slightly roundly raised and broadly gently reflected at apical area, antenna comparatively long, Al2 appr. twice as thick as A3 at base in narrowest view. Head from above with vertex roundly depressed around each ocellus and at posterior margin raised like a dike, thence posteriorly flatly inclined to occipital margin.

HW,HL,IODv,A3,P=100,50,17,22,152. IODs=10:8. OOD,Od,POD≒1,2,2. A3=AW×4 (in narrowest view ×5). A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,20,6,35(26),38(32). RC=C, but somewhat close to B, CV1=CV2×6. TCV:CV2≒8:5, TCV gently sinuate, angle roughly about 100°.



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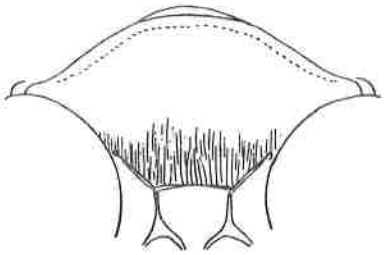

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Occipital carina complete, pronotal collar transverse, but anterior part not linearly narrow, in frontal view dorsal line roundly raised and minutely and weakly swollen in middle, posterior part discoloured, lamina on side not strongly produced (Fig. 236). Subalar area of mesopleuron normal, only on posterior area edged at outer margin. Propodeum without lateral carinae, area dorsalis enclosed with feeble

furrow, area apicalis only on sides shortly carinated, GSR roundly elevated, but not discoloured.

Frons distinctly microcoriaceous and closely superimposed with fine punctures, PIS on median area PD and on elevations PD; mesoscutum microcoriaceous and finely (but comparatively somewhat largely), fairly closely punctured (see remarks), punctures sparser on median area, propodeum with lateral series of striae, area dorsalis at base obliquely coarsely (often one carina in middle long extended on to median furrow), on median furrow transversely, closely striate (see remarks), disc usually finely closely punctured, rest of dorsal and posterior areas closely covered with fine hair-bearing points, sides except antero-ventral and postero-dorsal areas finely closely punctured.

♂, unknown.

Holotype: ♀, Luzon, Mt. Makiling, C. F. Baker (USNM).

Paratypes: 1 ♀, Luzon, Los Banos, I. 1922, F. X. Williams (BPBM); 1 ♀, Luzon, Mt. Banahao, C. F. Baker (USNM).

Other specimen: 1 ♀, Is. Basilan, C. F. Baker (USNM).

Remarks. The specimen from Basilan listed above markedly differs from those of Luzon in colour of legs and in general punctuation:

Fore and mid legs except coxa and arolium and hind leg on apex of coxa, whole of trochanter, both ends of femur, base broadly and apex narrowly of tibia with apical spurs yellow, on fore and mid legs slightly reddish; posterior part of pronotal tubercle also broadly yellow. Microsculpture and punctuation on frons similar, but mesoscutum without microsculpture, shining and very finely and very sparsely punctured, mesopleuron with very feeble hair-points sparsely scattered; lateral series of striae of propodeum very faintly defined on posterior portion alone, area dorsalis without striae, only very weakly punctured on disc.

In structure only anterior part of collar is slightly different, dorsal margin in frontal view triangularly raised and distinctly tuberculate in middle.

Length 12 mm.

Based upon the diffrrences above mentioned the population occurring on the Island of Basilan is separated from the typical form at the subspecies rank:

Trypoxylon varipunctatum kiashi ssp. nov.

Holotype: ♀, Is. Basilan, C. F. Baker leg. (USNM).

24. TRYPOXYLON VARIPILOIDES TSUNEKI, 1980

Trypoxylon varipiloides Tsuneki, SPJHA, 12: 67, 1980 (♀, Borneo).

Specimens examined:

Luzon. 6 ♀ 2 ♂, Mt. Makiling, C. F. Baker (USNM); Los Banos, 2 ♀, C. F. Baker (USNM); 2 ♀, March-June. 1925, -?- (BPBM); 1 ♀, III. 1917, F. X. Williams (BPBM); 3 ♀ 2 ♂, 25. X. 1952; 30. I, 7. III, 7. IX, 22. XI. 1953, Townes family (AEI).

Mindoro. 2 ♀, Alcate Vict., 7,10. IV. 1954; 1 ♀, S. Luis Calapan, 14. IV. 1954, H., M. and D. Townes (AEI).

Sibuyan. 1 ♀, C. F. Baker (USNM).

Samar. 9 ♀ 3 ♂, C. F. Baker (USNM).

Panay. 2 ♀, C. F. Baker (USNM).

Negros. 2 ♀, C. F. Baker (USNM).

Mindanao. 5 ♀ 2 ♂, Butuan, C. F. Baker (USNM); 4 ♀, Surigao, Baker (USNM); 1 ♀, Zamboanga, Baker (USNM); 1 ♀, Zamboanga, del sur Lemesahan, 600 m, 7. IX. 1958, H. F. Milliron (BPBM); 2 ♂, Kolambugan, Baker (USNM).

Basilan. 1 ♀, C. F. Baker (USNM).

The Philippine population of this species, although they differ in some characters more or less (sometimes considerably markedly) from island to island, differ as a whole from the Bornean in that G5 is, as a rule, not marked with a black patch above, IODc is relatively slightly larger, namely IODs=1.0: 6.5-7.0 (in 12 ♀♀ examined: 6.3, 6.5, 6.5, 6.5, 6.5, 6.5, 6.7, 6.7, 6.8, 7.0, 7.0, 7.0) and the form of apical margin of clypeus and that of ASR and PAF are not constant even within an island population.

But the differences between island-populations are sometimes very much more marked than that from Borneo.

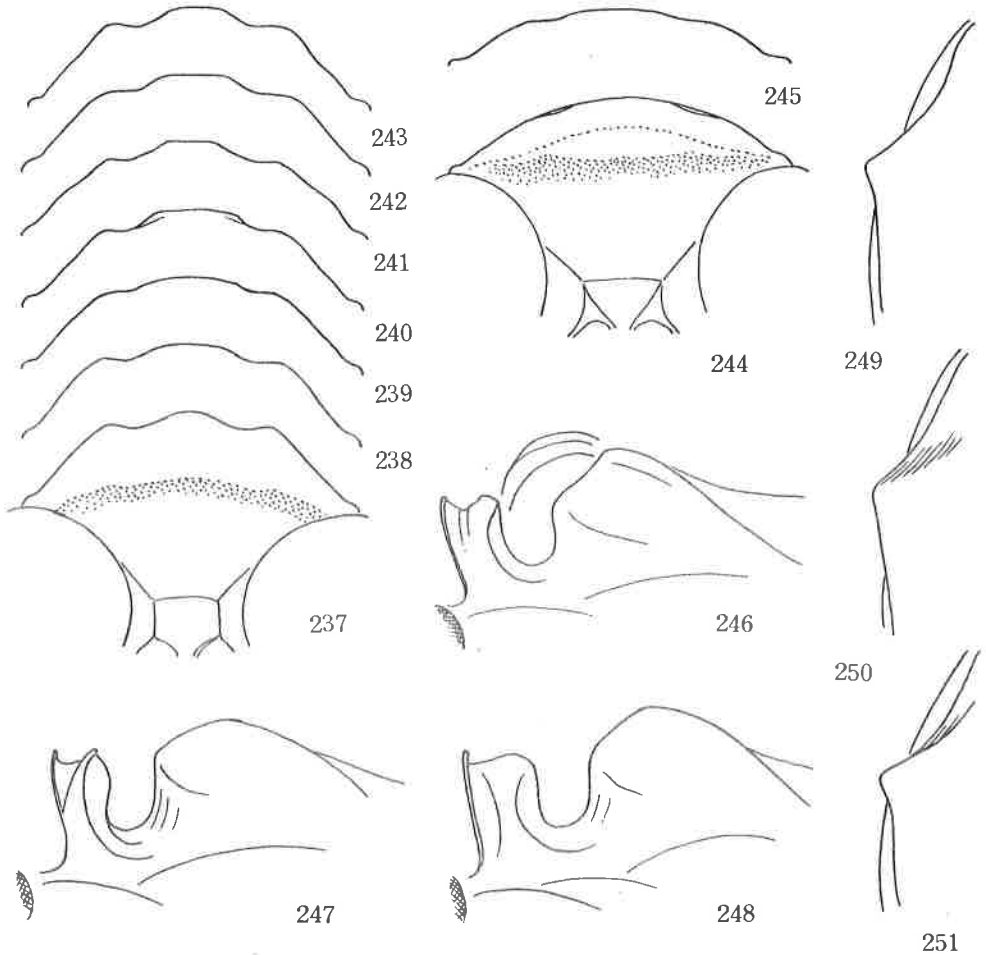
Ground colour of antenna and legs yellow, arolia always black.

I. Luzon population. 14 ♀ 3 ♂.

(1) Antenna. ♀. A2-12 brown or dark brown above, sometimes A1 carrying a pale brown spot at apex above. ♂. A2 above and A3-13 wholly dark brown. (2) Fore coxa largely except apex black, fore femur with a brown dusky streak on outer side. (3) Mid coxa on basal half black, femur medianly broadly except underside and T2-3 or 2-5 brown. (4) Hind coxa except apex black, femur except both ends dark brown to black, tibia except basal ring and underside brown, tarsus brown to dark brown. (5) Apical margin of clypeus in ♀: Figs. 237-243, as a whole median area not strongly produced; in ♂: Figs. 244-245. (6)SAT-ASR in dorso-lateral view to see through PAF: Figs. 246-248. 246 most frequent form and 248 rather exceptional, hind carina of ASR comparatively thick, not reflected, not pointed; PAF U-shaped in cross section. The structure is rather close to that of varipilosum Cameron. (7) Medio-apical flattened smooth area of SAT without fovea. (8) Lamina on side of pronotum (Figs. 249-251) always triangularly produced, form fairly constant, differing slightly in the curvature of posterior slope. (9) Mesoscutum finely sparsely punctured, sometimes nearly mat, sometimes fairly shining. (10) Hair on head pale brassy, nearly silvery.

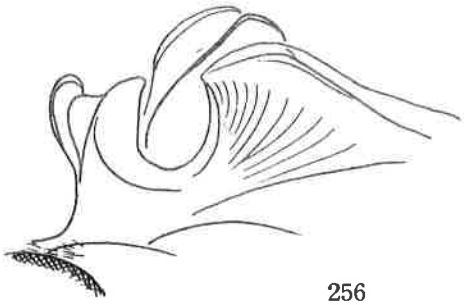
II. Mindoro population 3 ♀.

In colour and structure mentioned above similar to Luzon population.



Figs. 237-251. Trypoxylon varipiloides Tsuneki, Luzon population.

252



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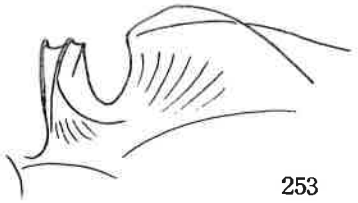

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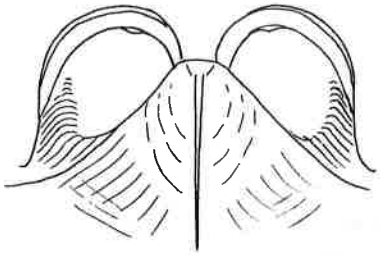

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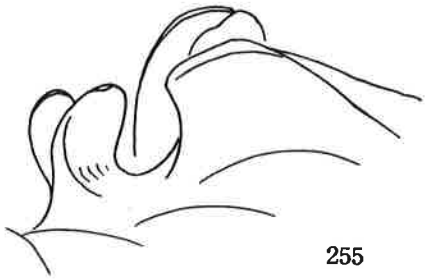

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Figs. 252–258.

Trypoxylon varipiloides Tsuneki

252–253 ... Samar population

254 ... Negros population

255–258 ... Mindanao population

III. Sibyyan population. 1 ♀. Similar to the Luzon.

IV. Samar population. 9 ♀ 3 ♂

(1) ♀. From apical part of A3 to A12 pale brown or brown above, sometimes nearly completely ferruginous. (2) Basal half of all coxae black, rest of fore leg yellow. (3) Mid T2-3 or 2-5 pale brown or brown, rest yellow. (4) Apical half of hind femur, apical area on outer side of tibia and tarsus brown, longer tibial spur somewhat brownish. (5) Apical margin of clypeus as in Luzon population. (6) Hind carina of ASR always thin, lamellate, slightly reflected (Fig. 252 in 11/12, only in one tricarinate as given in Fig. 253), PAF typical, mostly V-, often U-shaped in cross section. (7) Medio-apical smooth area of SAT sometimes (in 6 ♀) with a fovea, sometimes (3 ♀ 3 ♂) without it. (8) Lamina about 120 at apex, apex nearly pointed, in ♂ apical angle slightly more acute. (9) Mesoscutum in ♀ always with strong plumbeous lustre, bluntly shining, punctures very fine and sparse, in ♂ somewhat more shining, with punctures slightly more distinct. (10) Hair distinctly brassy or golden.

V. Panay population. 2 ♀.

(1) 1-12 completely yellow-ferruginous. (2) Coxa posteriorly except apex black rest yellow. (3) Mid coxa at base of posterior side black, rest yellow. (4) Hind coxa at extreme base black, femur on apical half (in one only beneath) brown (5) Medio-apical area of clypeus more produced than in typical. (6) ASR as in Fig. 247 in both. (7) Lamina narrowed apically as in Fig. 251. (8) SAT without fovea. (9) Mesoscutum with strong plumbeous shine, punctures fine and sparse, surface half mat. (10) Hair pale brassy.

VI. Negros population. 2 ♀.

(1) Antenna completely ferruginous. (2)Coxa largely and arolium black, rest yellow. (3) Basal half of coxa black, rest as in fore leg. (4) Basal half of black, apical half of femora brown, rest yellow. (5) Clypeus with medio-apical area more produced than the lateral. (6) Hind carina of ASR lower than fore, thin and acute, PAF U-shaped in cross section (Fig. 254). (7) SAT without fovea. (8) In one about 120°, in the other 110°, narrowed apically and more pointed. (9) Mesoscutum with blunt plumbeous shine. (10) Hair on head pale brassy.

VII. Mindanao population. 11 ♀ 4 ♂.

(1) From apex of A3 to 12 brown above. (2) Extreme base of coxa black, femur yellow. (3) Base narrowly of coxa black, T2-3 pale brown, rest yellow. (4) Base of coxa black, apical half of femur, apical area of outer side of tibia, T1-3, 1-4 or 1-5 brown; in ♂ femur sometimes medianly broadly pale brown. (5) Clypeus with medio-apical area slightly more produced than the lateral, relative width to lateral emarginations variable, in ♂ apical margin nearly rounded. (6) Hind carina of ASR lamellate, slightly higher than the fore and markedly reflected, with apex bluntly pointed, PAF oval in cross section (Figs. 255-257, constant in both sexes). (7) SAT in ♀ always with fovea, in ♂ without fovea. (8) Lamina narrowed apically and produced (Fig. 258). (9) Mesoscutum with plumbeous lustre, mat or half mat, rarely fairly shining, punctures fine, varied in density, but always PIS > PD. (10) Distinctly brassy-golden.

VIII. Basilan population 1 ♀.

(1) A4-12 brownish above. (2) (3) Except base of coxae yellow. (4) femur on apical half and tibia at apex of outer side brown. (5) Within variation range. (6) Similar to Mindanao population. (7) Not narrowed, apical angle about 120 . (8) SAT always with a fovea in ♀, without in ♂. (9) With plumbeous shine, sometimes half mat, sometimes fairly shining, punctures fine, more or less varied in distribution, but always PIS > PD. (10) Brassy.

Summary.

Luzon-Mindoro-Sibuyan population. Antenna above except base brown, fore and mid femora partly, mid tarsus partly, hind femur largely, tibia partly, tarus wholly brown or dark brown (rest yellow). ASR comparatively thick, bicarinate, carinae similar in height, hind one not reflected, SAT without fovea on medio-apical flattened area.

Samar population. Antenna as in Luzon, sometimes as in Panay. Fore and mid femora yellow, mid tarsus partly, hind femur on apical half, tibia partly and tarsus wholly brown. Hind carina of ASR thin, as high as fore, not reflected, SAT with or without fovea.

Panay and Negros population. Antenna, fore and mid legs except base of coxae and arolia completely, hind leg except brownish apical half of femur wholly yellow. SAT without fovea.

Mindanao and Basilan population. Antenna as in Luzon, legs as in Panay-Negros except parts of hind tibia and tarsus brown. Hind carina of ASR higher than fore, reflected and pointed on top, PAF oval in cross section and SAT in ♀ with, in ♂ without fovea.

The four population above listed are considered to form a local race respectively and that of Mindanao-Basilan is closest to the nominate form occurring in Borneo, although it has its own special distinctions.

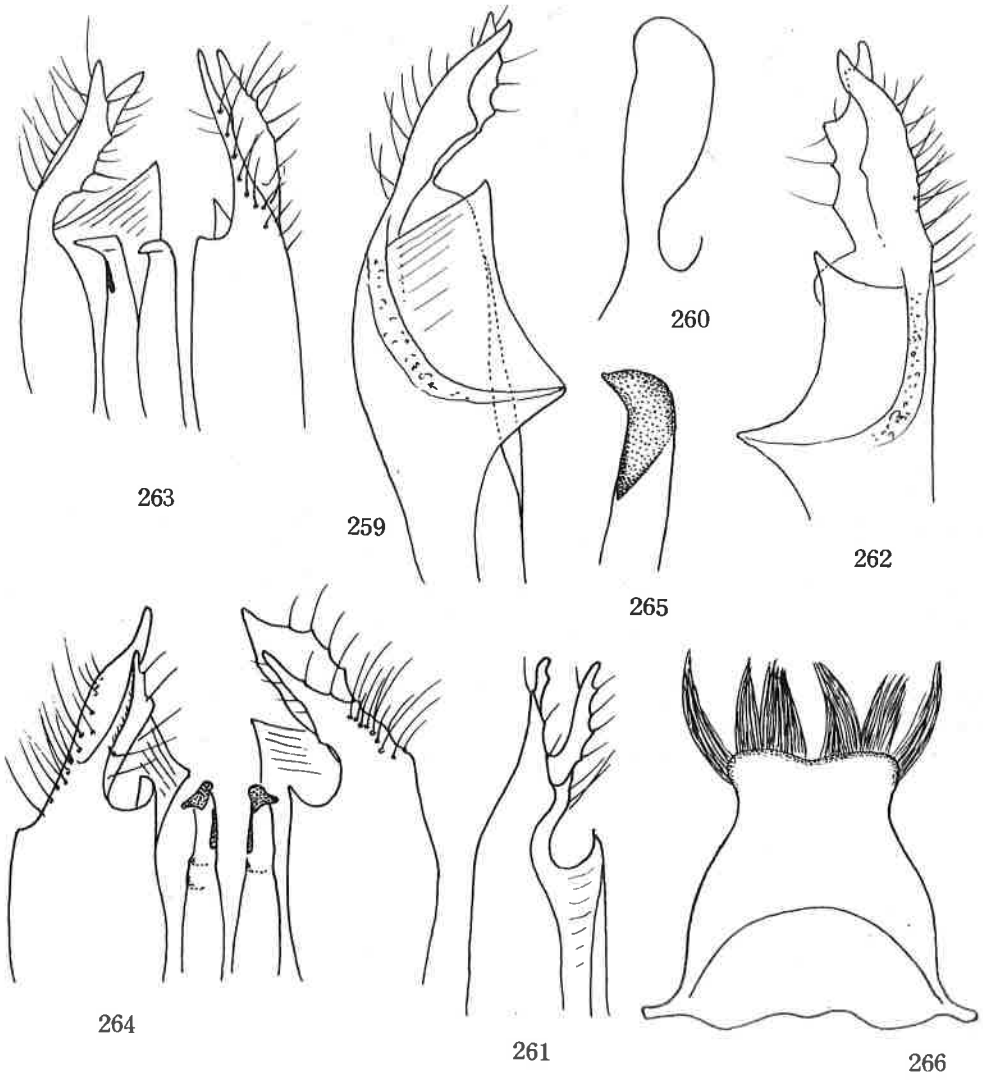
Measurements (within parentheses ... ♂)

(A) Luzon specimen. HW,HL,IODv,A3,P=100,50,24,27,166 (100,46,24,16,150). IODs=10:6.8 (10:8.5). OOD,Od,POD=2,5,2.5 (2,4,2.5). A3=AW×5.0 (×2.7). A3,4,5=10,7,6.5 (10,7,7). P,Ma,Mi,2(Ma),3(Ma)=100,16,6,32(18),38(24) (100,16,7,34(18),39(26). RC=B, somewhat close to C. Rl short (do.). CV1=CV2×7 (6.5). TCV:CV2÷7:3 (do.). Angle at base 90° (100°).

(B) Mindanao specimen. HW,HL,IODv,A3,P=100,52,24,28,168 (100,50,26,18,134). IODs=10:6.5 (10:7.5). OOD,Od,POD=2.6.3 (2,4,2.5). A3=AW×5.3 (×2.5). A3,4,5=10,7,6 (10,7.5,6.5). P,Ma,Mi,2(Ma),3(Ma)=100,16,6,30(17),34(19) (100,18,6,36(23),32(28). RC=C (C-B). Rl short (do.). CV1=CV2×7 (×6.5). TCV:CV2÷7:4 (do.). Angle about 90° (do.).

The male genitalia were examined with one each of the Luzon and Mindanao specimens. They were completely the same in structure and completely agree with those of Bornean specimen (Pt. VI of the present paper, p. 66, figs. 217-218). Here the parts of the structure are given in more detail:

Left paramere in ventral view: Fig. 259, left volsella in ventral view: Fig.



Figs. 259–266. Trypoxylon varipiloides Tsuneki, ♂
259–265 ... Genitalia. 266 ... Sternite 8.

260. Right paramere seen from inside to show the state of apical splitting: Fig. 261. Ditto seen from beneath: Fig. 262. Apical part of total structure in dorso-lateral view (from left side): Fig. 263. Ditto in dorsal view: Fig. 264. Right penis in dorso-lateral view (from left side): Fig. 265.

Noteworthy are the facts that the apex of penis valve are turned backwards and that the paramere is provided with a flag-like membraneous expansion at its outer ventral margin.

Sternite 8 (Fig. 266) is also similar to one other among the three compared.

25. On the Palawan specimen of TRYPOXYLON VARIPILOSUM CAMERON, 1901

Trypoxylon aureohirtum Tsuneki, Steenstrupia (Copenhagen), 4: 77, 1976 (♀, Palawan)
Trypoxylon varipilosum: Tsuneki, SPJHA, 11: 2, 1980 (n. syn.).

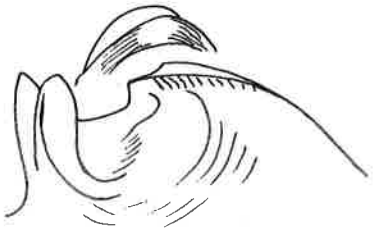
References to varipilosum Cameron, 1901 (simple list is omitted):

Trypoxylon varipilosum Cameron, Proc. Zool. Soc. London, 2 (2): 28, 1901 (♀, Singapore).
Trypoxylon varipilosum: Tsuneki, SPJHA, 8: 44, 1978 (redescr. of holotype, figs.).
Trypoxylon khasiae: Tsuneki, Ibid., 9: 84, 1979 (partim, Malayan specimens only).
Trypoxylon khasiae: Tsuneki, Ibid., 11: 36, 1979 (♀, Sumatra, Java, variations).
Trypoxylon varipilosum: Tsuneki, Ibid., 12: 64, 1980 (♀, Borneo)

The Palawan specimen which was first described in 1976 as T. aureohirtum n. sp. and later in Pt. VI of the present paper was identified with T. varipilosum Cameron seems to have possibility to belong to the preceding species representing the Palawan form. According to the reexamination of the holotype specimen of T. aureohirtum main characters are as follows:

Antenna dark brown, A1-2 and base of 3 yellow. Fore and mid legs except black base of coxae and areolia amber yellow, but fore femur with one, mid femur with two brown streaks above and mid T2-5 brown (5 partly pale). Hind coxa apically, trochanter wholly, both ends of femur, base of tibia and spurs amber yellow, rest nearly black. Gaster with ground colour black, ferruginous are greater part of apical swelling of G1 (from base till anterior third of swelling black), G2-3, basal half of 4, apical half of 6, scattered obscure patches on blackish part of 4 and 5 (black of 4 and 5 may be postmortem change). Hair on head saturate golden; on thorax-complex brassy.

Head in frontal view with sides rounded, very slightly narrowed below, vertex considerably depressed, frontal elevations distinctly roundly raised, medial furrow fairly deep, SAT-ASR: Figs. 267 (dorso-lateral), 268 (do., but from slightly more dorsal side), 269 (lateral), SAT moderately high nasiform, smooth and shining, medio-



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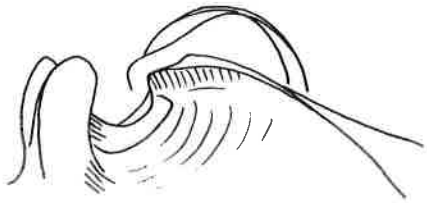

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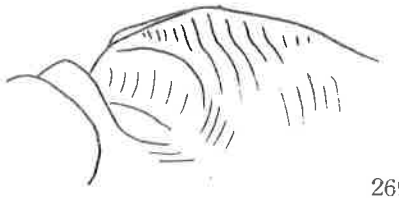


269

Figs. 267-269.
T. aureohirtum Tsuneki, 1976, ♀
(? = T. varipilosum Cameron)

apical flat area suboval in form (attenuate dorsally), obliquely inclined, slightly concave as a whole, appearing to be a shallow fovea and from middle of apical margin a raised line running down in middle of IAA as a ridge (the area covered with golden hair), PAF deep, flat-bottomed, oval in cross section, ASR highly raised, bicarinate on top, fore carina lamellate, amber yellow, hind carina somewhat thick, raised in obtuse triangle, black and weakly reflected backwards, clypeus as in Fig. 240 (similar to that of holotype of varipilosum). Pronotal lamina broad triangle, with apex obtuse, mesoscutum with plumbeous shine, finely sparsely punctured, PIS 3-4 times PD and without microsculpture. Propodeum without lateral carinae, but with distinct

lateral series of striae, area dorsalis without lateral furrows, GSR not raised.

HW,HL,IODv,A3,P=100,46,22,32,186. OOD,Od,POD=1,3,1. IODs=10:8. A3=AWx6.5. A3,4,5=10,6.5,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,15,5,28(18),28(22). RC=C, but close to B, Rl short, CV1≒CV2x8, TCV:CV2≒2:1, angle about 90°, TCV weakly sinuate.

Comparison with the Philippine populations of T. varipiloides.

According to the characters above redescribed the Palawan specimen in question is similar in the characters of (1) antenna, (2) fore leg, (3) mid leg, (4) hind leg, (5) clypeus to Luzon population and in those of (6) ASR-PAF and (7) apical fovea of SAT to Mindanao population. But in the characters of pronotal lamina, IODv and IODs it is inconsistent with any of them.

If it really belongs to T. varipiloides and not to varipilosum it comes to represent a particular form and then important is the fact that the name, varipiloides becomes a synonym of aureohirtum Tsuneki, 1976 and the latter comes to revive.

But here the determination is reserved, because of inconsistency or uncertainty of some important characters, especially of the male, and of the reason below mentioned:

The variation in characters of T. varipiloides in the Philippine representatives makes it difficult to separate it from varipilosum Cameron in the female sex.

Usually they are separated from each other by the differences in IODv (100:21 or 22 in sum and 100:24 or 25 in oides), form of ASR (thick in sum and thin in oides), PAF (U in sum, V or oval in oides), apical margin of clypeus (median area broader and more produced in sum than in oides), pronotal lamina (obtuse triangle, with apex broadly rounded in sum, acute triangle, apex more pointed in oides) and colour of hind leg (with two brown stripes on femur in sum, apical half of femur brown in oides). In the Philippine specimens of so believed varipiloides IODv is oides-like, IODs is somewhat intermediate, though mostly closer to oides, SAT, ASR, PAF and clypeus are variable, including both forms and pronotal lamina and colour of hind leg are certainly oides-like, but the last two are not clear-cut in the actual discrimination (in lamina due to tuft of hair at apex). In the Palawan specimen important is that IODv, IODs and lamina of pronotum are sum-like.

In the male, however, the difference between the two species in the structure of genitalia is very decisive and clear-cut. Moreover, they differ from each other in the relative length of IODs and Al3 and in the colour of femora, but these characters may vary individually or locally. As to ASR-PAF in the Malayan male of sum it is very similar to that of the Mindanao specimens of oides.

To give the final determination the sufficient material of aureohirtum or varipilosum, especially of the male, from the Island of Palawan is necessary.

26. TRYPOXYLON WILLIAMSI SP. NOV.

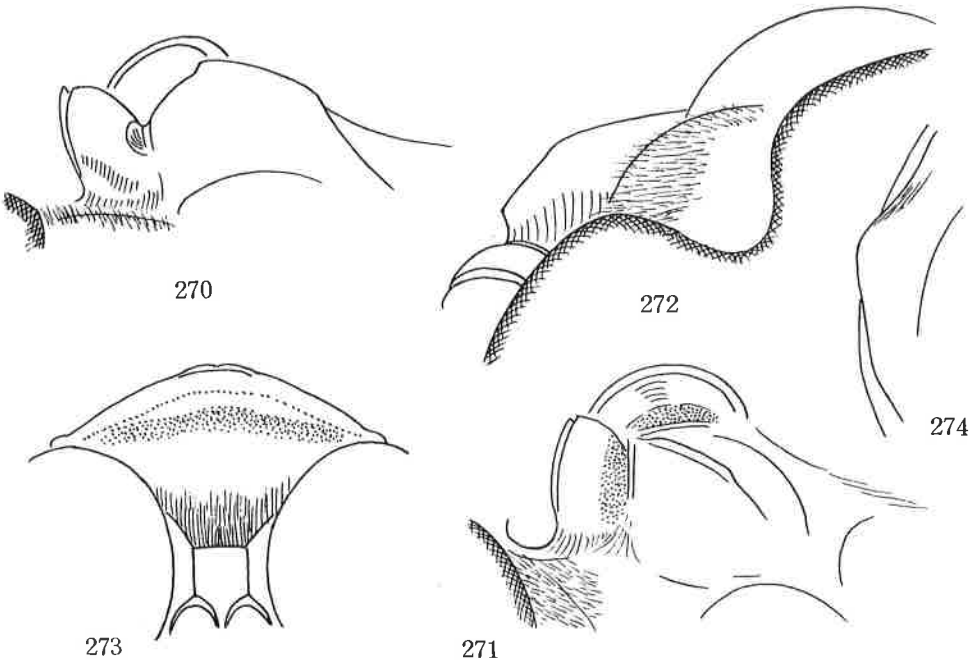
Resembling T. rufigaster occurring in Souteast Asia, but differs from it in the structure of frons, IODs and SAT-ASR and can easily be distinguished.

Diagnosis. ♀, 9 mm, gaster except brown patch on apical swelling of Gl and legs except small brown area on hind tibia ferruginous, collar narrowly yellow on top, mesoscutum without microsculpture, propodeum with lateral carinae, Gl flask-shaped, RC=C-M, IODs=2:1, hair brassy, frontal elevation markedly high, SAT nasiform, PAF moderately deep, up-curved, V-shaped, apical margin of clypeus weakly emarginate in middle.

Black, ferruginous to yellow are (antenna lacking) apical margin of clypeus, mandible (apex reddish), palpi, collar on top transversely, discoloured posterior part and anterior and lateral margins including apex of lamina, gaster except a brown mark on apical swelling of Gl and legs except black coxal bases and arolia and brown streak on apical half of hind tibia. Hair on clypeus brassy, on eye incision, dorsal surface of thorax-complex golden, rest of thorax-complex brassy, on clypeus parallel, on baso-lateral areas of propodeum curled.

Head in frontal view with sides rounded, very slightly convergent towards clypeus W:L=100:94, vertex not depressed, eye incision deep, moderate in width and gently narrowed apically, dorsal margin somewhat inclined outwards, frons on each side of medial furrow markedly highly elevated, elevation suboval in outline, stretching from level of fore ocellus to base of SAT, SAT nasiform, acutely carinated in middle, with lateral inclinations oblique, ASR as high as SAT, widely expanded anteriorly, apical area broadly ferruginous, PAF moderately deep, up-curved, V-shaped in cross section,

SAT-ASR in dorso-lateral view: Figs. 270 and 271, in lateral view: Fig. 272, medio-apical area of SAT obliquely smoothly inclined, without flat shining area, clypeus: Fig. 273, disc at base gently raised and at apex distinctly reflected, supraclypeal area slightly longer than wide, flat, but not depressed, occipital carina complete, but depressed behind buccal cavity.



Figs. 270-274. Trypoxylon williamsi sp. nov., ♀

HW,HL,IODv,A3,P=100,54,29,—,160. IODs=10:5, antenna absent. OOD,Od,POD=4.9.7. P,Ma,Mi,2(Ma),3(Ma)=100,22,6,30(29),34(38).

Pronotal collar transverse, anterior part narrow ridge-like, lamina on side: Fig. 274, subalar area of mesopleuron normal, propodeum with lateral carinae well defined only on median area, area dorsalis without lateral furrows, area apicalis only with lateral carinae, GSR roundly highly raised, brown in colour. In fore wing RC=C, but close to M, CV1=CV2×4.5, TCV:CV2≒5:4, angle about 120°.

Frons weakly microcoriaceous and closely superimposed with shallow fine punctures punctures and sculpture on top areas of elevation much weaker and surface fairly shining, mesoscutum shining, closely finely punctured, PIS=PD, lateral areas of propodeum along lateral carinae finely closely punctured with hair-bearing points, posteriorly mixed with series of weak striae, surface of the areas covered closely with golden hair and the sculpture cannot be observed under natural condition, area dorsalis at median furrow weakly transversely striate, disc finely closely punctured, on posterior portion punctures sparse, sides of the segment obliquely finely closely striate, but antero-ventral femoral sinus smooth and shining.

♂, unknown.

Holotype: ♀, Luzon, Mt. Makiling, date undescribed, C. F. Baker leg. (USNM).

Remarks. The present species is decicated to the late Dr. F. X. Williams who made many interesting investigations on the life of the Sphecid wasps on and around the mount where the holotype of the present species was captured.

27. TRYPOXYLON VARICOLOR SP. NOV.

Characteristic in the comparatively small but highly raised tubercle on each side of frontal furrow and high narrow acute nasiformed SAT.

Diagnosis. ♀, 14–20 mm, mostly 17–18 mm. Antenna, fore and mid legs largely, hind leg partly and gaster from apex of G1 posteriorly largely ferruginous, hair on head golden, IODs=10:8, frons and SAT conspicuous as above given, PAF moderate in depth, up-curved, V-shaped, medio-apical area of clypeus bevelled, mesoscutum micoo-coriaceous and punctured, subalar area normal, propodeum with lateral carinae, G1 flask-shaped, RC=C. ♂, 13 mm. IODs=10:9, A13 shorter than A10–12, clypeus rounded out, without bevelled area.

♀. Colouration considerably different between specimens from the diffeeent islands.

(1) Luzon specimens. Black; ferruginous are antenna (brown above), apical marginal area of clypeus broadly, mandible (apically reddish brown), mouth parts, discoloured posterior part of collar (dusky yellow), posterior margin of tubercle (do.), tegula and basal plate of wing, from apical part of apical swelling of G1 to end (G3, 4,5 brown or dusky above), apices of coxae, trochanters except above (brown), rest of fore and mid legs except brown streak on posterior side of femora, hind femur on both ends narrowly, base and inner side and spurs of tibia and both ends of T1 narrowly and whole of T2–5 (arolia black). Hair on clypeus and frons pale brassy, nearly silvery, on thorax-complex silvery or silky white, on clypeus at base sinuately convergent towards medial line and on propodeum sparse, not curled at baso-lateral areas.

(2) Mindanao specimens. The specimens (6 ♀) are long preserved ones and presumed to be considerably faded in colour. Yet the difference in colour from the Luzon specimens is very large even when such a condition is taken into consideration.

Ferruginous are antenna (A4–12 pale brown above), apical half of clypeus, mandible (apex dark brown), palpi, lateral margins of pronotum, discoloured posterior part of collar, tubercle (yellow), tegula and basal plate of wing, part of G1 (markedly variable: in 2 black above except apical area, in 2 at base till spiracles above and a large mark on apical swelling above black, median area and apex slightly darkened brown and in the remaining 2 similar, but black is replaced with dark brown and median area nearly ferruginous; in all sides and underside ferruginous), G2–6 (with scattered blackish marks, possibly visceral remnants seen through semitransparent sclerite) and greater part of legs: ground colour ferruginous and extreme bases of coxae (in hind one broader) and arolia black, rest of fore and mid legs completely (often femora somewhat brownish above) bright ferruginous, hind femur above, apical part of tibia and T1 more or less brownish, often completely ferruginous. Hair brassy to golden.

(3) Samar specimens. 5 ♀, long preserved ones. Similar to the Mindanao specimens in general, but G1 always completely black except apical part of apical swelling. Hair deep golden.

(4) Panay specimen. 1 ♀, ditto. G1 except apical swelling black, antenna and legs completely ferruginous, in one of them prepectus bearing a yellow patch above, otherwise as in Mindanao specimens. Hair brassy.

(5) Negros specimen. 1 ♀, ditto. Just as in the Panay specimen.

(6) Biliran specimen. 1 ♀, ditto. As in the Samar specimens, but hair brassy.

Structure and sculpture. Except individual variations common to all:

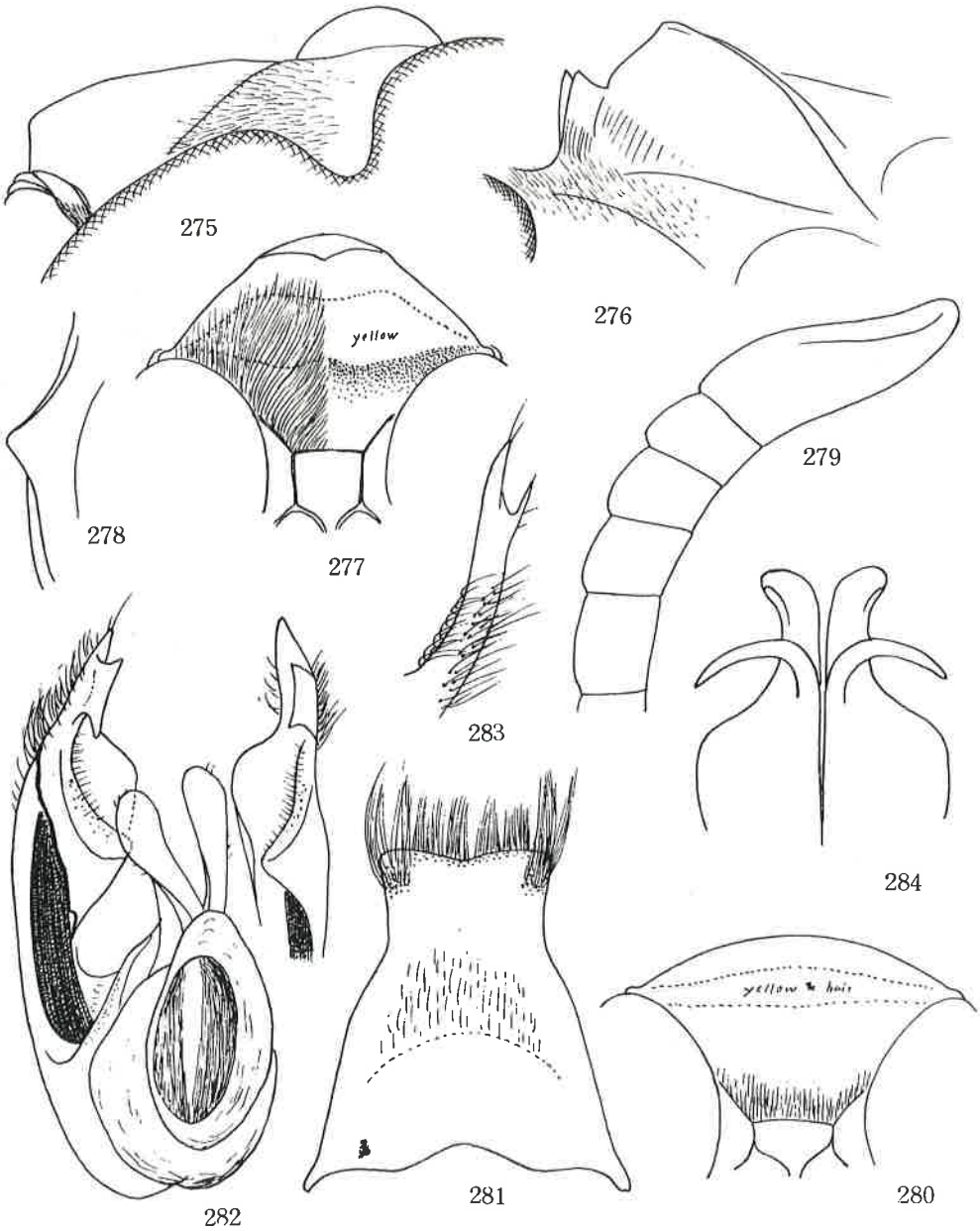
Head in frontal view with sides roundly, fairly markedly convergent towards clypeus, vertex distinctly depressed, eye incision narrow and deep, with dorsal margin horizontal, frons on each side of medial furrow markedly highly raised to a comparatively small rounded tubercle, in length occupying only a half of frons (due to long SAT), SAT long high nasiform, reaching upwards till about mid point of the distance to fore ocellus, it is elevated much higher than top of ASR (Fig. 275, lateral view) and acutely carinated on median ridge, medio-apical area smoothly obliquely inclined and at upper part of IAA medianly longitudinally weakly carinated, ASR acutely bicarinate, hind carina with posterior aspect sometimes flatly inclined, sometimes gently roundly swollen, PAF moderately deep, with bottom line up-curved, V-shaped in cross section, SAT-ASR in dorso-lateral view: Fig. 276. Clypeus strongly roundly produced, medio-apical area (not the marginal line) triangularly depressed, forming bevelled area there (Fig. 277).

Measurements of a Mindanao specimen (holotype) (within parentheses are those of a Luzon specimen):

HW,HL,IODv,A3,P=100,50,22,30,172 (100,48,23,30,160). IODs=10:8.3 (10:7.8).

OOD,Od,POD=2,5.5,3 (2,5,2). A3=AWx5 (ditto). A3,4,5=10,6,6 (10,7,6). P,Ma,Mi,2(Ma) 3(Ma)=100,20,6,35(22),36(25) (100,21,6,36(25)38(30)).

Occipital carina complete, not depressed behind buccal cavity. Pronotal collar with dorsal margin in frontal view gently raised towards middle and minutely rounded there, lamina on side triangularly produced, apex nearly pointed (Fig. 278), subalar area normal, at outer margin only posterior part edged and continued to mesopleural flange. Propodeum with lateral carinae, carinae short, only on median area defined, area dorsalis enclosed with shallow weak furrow, area apicalis well defined, lateral carinae high, curving and lowering towards dorsal middle, but not completely connected



Figs. 275-284. Trypoxylon varicolor sp. nov. 275-278, ♀; 279-284, ♂.

with each other, GSR highly raised as a whole, not rounded or semicircular at dorsal area only. In fore wing RC=C, R1 short, CV1=CV2 × 7–8 (in Luzon specimens mostly ×6) TCV:CV2≒5:3, TCV feebly bent below middle, angle about 100°.

Frons weakly microcoriaceous and finely sparsely punctured, punctures much sparser on top area of the tubercles, mesoscutum more distinctly microcoriaceous, punctures superimposed are similarly fine, somewhat close, PIS 1–2 times PD, propodeum on dorsal and posterior sides wholly, including series of striae along lateral carinae, obliquely strongly striate, interspaces of striae filled with finer weaker striae, but surface fairly shining, sides except antero-ventral femoral sinus also obliquely closely striate and mixed with punctures.

♂ (a specimen from Mindanao). 13 mm. In colour generally similar to the female of Mindanao, but antenna above darker brown, G1 at base above till spiracles and on fore half of apical swelling above dark brown and on the rest brownish ferruginous, G2,3,4 each with a large brown mark above, fore and mid femora completely ferruginous hind femur except narrow both ends dark brown, tibia brown on inner side near apex. Hair brassy, on clypeus parallel.

Vertex, frons, SAT–ASR similar to those of ♀, eye incision deep, but slightly broader than in ♀, with dorsal margin slightly inclined outwards, antennal joints shorter, but A13 slightly longer than A10–12, curved at apex (Fig. 279). Clypeus: Fig. 280, at base gently raised, at apex almost not reflected, medio-apical area slightly depressed, but not forming a distinct bevelled area. Occipital carina, pronotum including lamina, subalar area, propodeum similar.

Head in frontal view with W:L=100:82, HW,HL,IODv,A3,A13,P=100,50,23,16,24,150. IODs=10:9. OOD,Od,POD=4,9,6. A3=AW×2.2. A3,4,5=10,8,7.5. A13=HW 2.8 and >A10–12 but <A9–12. P,Ma,Mi,2(Ma),3(Ma)=100,20,7,34(23),34(26). RC=C, R1 short, CV1=CV2×6, TCV:CV2≒5:4, angle about 95°.

Sternite 8: Fig. 281. Genitalia characteristic in that ventral one of the apical two lobes of paramere turns into a flag-like appendage as shown in Fig. 282 (in somewhat oblique ventral view), the state of splitting of the two lobes seen from outer side (left one from left side): Fig. 283. This is very curious and exceptional structure, not met with in any of the congeners. Furthermore, paramere is curious also in that dorsal surface is formed of a semitransparent membrane and it is on outer side covers the black main body. volsella spatulate as seen in Fig. 282; penis valve with shoulder and a pair of long sickle-shaped appendages as given in Fig. 284 (ventral view).

Microsculpture and punctures on frons and mesoscutum similar to those of ♀, but propodeum on area dorsalis not obliquely strongly striate, but at base longitudinally shortly striate, a stria in middle long extended on median shallow furrow beyond middle of its length (? constant), disc sparsely punctured, but on posterior portion feebly transversely striate, outside the area and posterior inclination covered with transverse striae that are extended from the series of striae along lateral carinae, sides sparsely covered with hair-bearing punctures except antero-ventral area.

Holotype: ♀, Mindanao, butuan, C. F. Baker (USNM).

Paratypes: 1 ♂, Mindanao, Kolambugan, C. F. Baker (USNM); 5 ♀, Mindanao (2 ♀, Butuan; 1 ♀, Surigao; 1 ♀, Dapitan; 1 ♀, Iligan) all C. F. Baker leg. (USNM); 5 ♀, Samar, C. F. Baker (USNM); 1 ♀, Negros, Cuerno Mts., C. F. Baker (USNM); 1 ♀, Panay (northwest), C. F. Baker (USNM); 1 ♀, Biliran, C. F. Baker (USNM); 2 ♀, Luzon, Los Banos, 30. V. 1954, H. & M. Tsownes (AEI).

Remarks. The Luzon population is considered to form a weak local race.

28. TRYPOXYLON RUFIVENTRE TSUNEKI, 1976

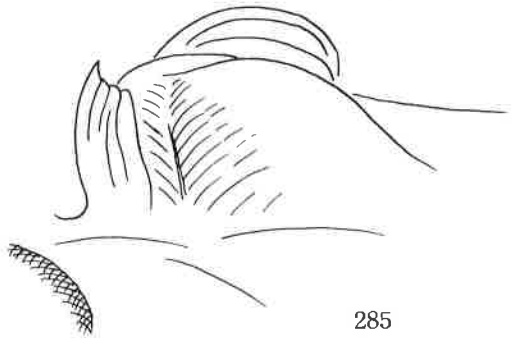
Trypoxylon rufiventre Tsuneki, Steenstrupia, 4: 81, 1976 (2 ♂ 1 ♀, Palawan).
Trypoxylon penangense Tsuneki, SPJHA, 9: 99, 1979 (partim: specimens from Malaya, Is. Penang and Singapore, nec those from Laos which was later separated as T. rutilans nov.).
Trypoxylon penangense: Tsuneki, SPJHA, 11: 51, 1979 (1 ♀ from W. Java, nec 6 ♂ from from Laos which were T. rutilans).
Trypoxylon rufiventre: Tsuneki, Ibid, 12: 49, 1980 (♀, Borneo, with remarks on paratypes ♀ ♂ and on penangense).

Specimens newly examined: 4 ♀, Luzon (3 ♀, Mt. Makiling; 1 ♀, Los Banos), C. F. Baker (USNM); 1 ♀, Luson, Los Banos, VII-VIII. 1917, F. X. Williams (BPBM); 1 ♀,

Luzon, Los Banos, 30. V. 1954, H. & M. Townes (AEI); 1 ♀, Samar, C. F. Baker (USNM); 1 ♀, Negros, Mt. Canlaon, 3600 ft, 29. IV. 1953, H., M. and D. Townes (AEI); 1 ♀, Mindanao, Agusan, 10 km SE of S. Francisco, 18. XI. 1959, L. W. Quate (BPBM); 1 ♀, Palawan, 3 km NE of Tinabog, 8. V. 1962, H. Holtmann (Malaise trap) (BPBM).

Distribution. Malaya, Singapore, Java, Borneo, Philippines (Tawi Tawi, Mindanao, Negros, Palawan, Samar, Luzon).

Comments on the comparative distinctions of the Bornean, Philippine (Is. Tawi Tawi), Javanese and Malayan specimens of the present species were already given in considerable detail in Pt. VI of the present series. In the following some explanations on the revised paratype ♀ ♂ from Is. Tawi Tawi and on the comparative characters of the island-populations above listed are given.



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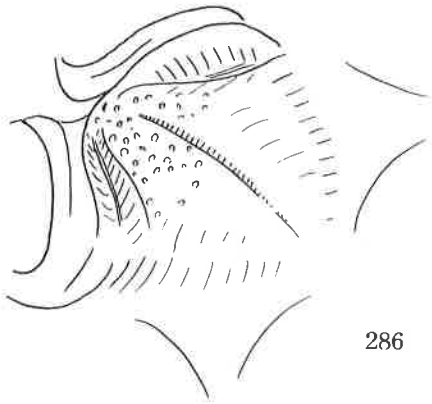

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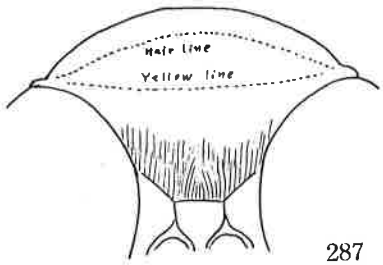

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288

Figs. 285–288.
Trypoxylon rufiventre
Tsuneki, 1976, ♀

Paratype ♀. Length about 10 mm. Antenna dark brown, A1 and 2, and 3 except apex yellow; legs ferruginous, coxae except apices and arolia black, hind femur except both ends, tibia on outer side at apical area and tarsus except articulations brown; hair golden. Pronotal collar without brownish band, gaster ferruginous, G1 with a black mark on apical swelling, rest of gaster posteriorly more or less brownish.

SAT-ASR: Fig. 285, 286, clypeus: Fig. 287, transverse carina at anterior margin of SAT comparatively low and weak, pronotal lamina somewhat toothed and at apex minutely rounded, mesoscutum microcoriaceous and mat (Fig. 288).

Measurements of paratype ♀ (within parentheses paratype ♂):

HW,HL,IODv,A3,A13,P=100,47,24,24,—,130 (100,48,24,16,29,116). IODs=10:7.5 (10:8). OOD,Od,POD=1,3,2 (2,6,3). A3,4,5=10,6,6 (10,7,6.5). A3=AW×4.3 (AW×2.5). (A13=HW×3.1 and ÷ A9–12). P,Ma,Mi,2(Ma),3(Ma)=100,22,7,30(28),34(36) (100,22,8,34(31),48(42)). RC=M-C (C). Rl moderately long (do.), CV1=CV2×7 (6). TCV:CV2÷5:3 (do.).

(1) Mindanao specimen – 1 ♀. (comparison with those of Tawi Tawi).

Antenna and legs generally similar, but dusky area of antenna black and hind T4–5 ferruginous. G1 from before apical swelling posteriorly broadly black above, G2,3,4 with an indistinctly outlined brown mark above respectively (not due to postmortem change) which is larger posteriorly. Apical transverse carina of SAT distinct, medianly s mewhat lowered. Microsculpture on mesoscutum very weak, punctures on the scut-

um fairly close, on antero-lateral areas PIS=PD.

(2) Samar specimen - 1 ♀.

Similar to (1) in the characters compared, but apical transverse carina of SAT lower.

(3) Palawan specimen - 1 ♀.

A3 from base black, all trochanters brown above, fore and mid femora slightly brownish above, hind femur except narrow base and apex black, tibia except basal ring and tarsus wholly nearly black. G1 with a brown mark on anterior half of apical swelling, rest brownish ferruginous (gaster stained and with scattered black patches due to postmortem change), apical carina of SAT as in Mindanao specimen, mesoscutum with plumbeous shine, microsculpture very delicate, surface half mat, lamina similar to that of the type.

(4) Negros specimen - 1 ♀.

Antenna completely bright ferruginous, legs except coxae and arolia ferruginous, but mid and hind trochanters with a brown mark above, mid femur medianly fairly widely dark brown above, hind femur nearly wholly above and partly beneath, tibia on outer side except base and T1-3 dark brown. G1 on apical swelling nearly wholly above, G2 with a small brown patch posteriorly above, G4 and 5 with a larger dark brown mark above and on sides. Apical transverse carina of SAT distinct, but low in middle area, mesoscutum distinctly microcoriaceous and closely superimposed with somewhat large punctures.

(5) Luzon specimens - 6 ♀.

A4-12 dark brown, legs except coxae and arolia ferruginous, but mostly mid- and always hind-trochanters brown above, mostly (5/6) mid femur partly brown above and always hind femur largely dark brown above, hind tibia on inner and outer sides except base and T1-3 brown or dark brown. Gaster always dark brown on apical swelling above, G2-4 with a brown or dark brown mark above respectively, always larger and darker posteriorly. Apical transverse carina of SAT variable in strength, sometimes medianly very low, mesoscutum always microcoriaceous, not shining.

Judging from the account above described the colouration and other characters compared are comparatively constant, but the antennal colour of the Negros specimen is quite exceptional. In order to confirm the stability of the character further material should be examined in future.

29. TRYPOXYLON AUROPILOSUM TSUNEKI, 1976

Trypoxylon auropilosum Tsuneki, Steenstrupia, 4: 70, 1976 (♀, Tawi Tawi).
Trypoxylon auropilosum: Tsuneki, SPJHA, 12: 59 (♀ ♂, N. Borneo, 13 figs.).

Specimens newly examined. 2 ♀, Is. Basilan, C. F. Baker (USNM).

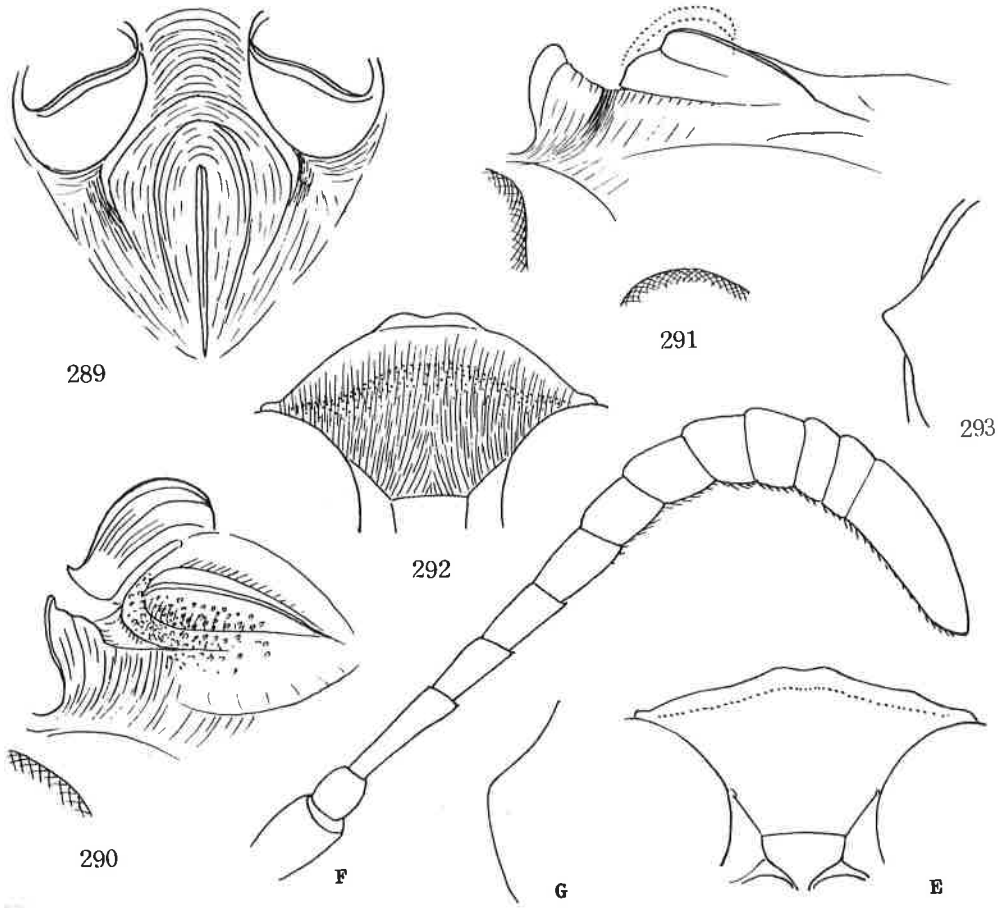
Detailed explanation on the Bornean specimens of this species was already given in Pt. VI of the present paper, in comparison with the holotype female from Is. Tawi Tawi, together with the first description of the male. In the following some comments on the Philippine specimens are given.

♀. Length 11-13 mm. Similar to T. kalimantan Menke (annulipes Cameron), but in the present species species PAF shallower, widely opened V-shaped in cross section and easily separable from this species. The present species is characteristic in the very slender and long gastral petiole, the mound carrying SAT and the markedly wide IAA.

Black, ferruginous or somewhat dusky ferruginous are apical margin of clypeus, mandible, palpi, discoloured posterior part of collar, tubercle posteriorly, tegula, sides of G1 (dorsal side medianly dark red), G2 and 3 except blackish mark above, fore and mid tibiae except vague streak, hind tibia at base and fore and mid T1-4. Hair golden, on clypeus parallel.

Head in frontal view with sides rounded, almost not narrowed below, W:L=100:82, vertex only slightly depressed, top line of hind ocelli higher than top level of eyes eye incision moderately broad, subparallel-sided, with dorsal margin horizontal, frons fairly strongly raised, median furrow broad and fairly deep in front of fore ocellus, but wider and shallower anteriorly. SAT-ASR in vertical view: Fig. 289, in obliquely dorso-lateral view: Fig. 290, in lateral view: Fig. 291, SAT low broad nasiform, without apical transverse carina, median area including the top carina markedly raised to form an elongate mound (Figs. 289-291), PAF only inner half well-defined, there gent-

ly curved up and at the top stopped by the posterior extension of ASR (Figs. 290, 291) ASR highly carinate at apical margin, IAA markedly broad (Fig. 289). Clypeus: Fig.292.



Figs. 289–293 (♀), E–G (♂). Trypoxylon auropilosum Tsuneki

Measurements (holotype): HW,HL,IODv,A3,P=100,50,24,26,210 (in two new specimens P is 222 and 223 respectively, others same). IODs=10:8 (ditto). OOD,Od,POD=1,6,3 (ditto). A3=AW×4.7 (4.7 and 4.8). A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,11,3, 22(14),24(20) (in new specimens: 100,10,3,22(12),25(22) and 100,10,3,22(14),26(22)). RC=C, Rl short, CV1=CV2×6 (in Basilan specimens ×4.5 and ×4.3 respectively). TCV sinuate, CV2 down-cruved as usual, angle roughly about 120° (ditto).

Pronotal lamina triangularly produced, fairly acutely pointed at apex (Fig. 293) mesoscutum without microsculpture, finely and sparsely punctured, propodeum with lateral carinae, area dorsalis distinctly enclosed with fine furrow, area apicalis margined with carina, but dorsal middle is interrupted by the extension of median furrow of posterior inclination, GSR very highly, subtriangularly elevated, in lateral view curved and discoloured to amber-yellow.

♂. Yet undiscovered from the Philippines, in the Bornean specimen generally similar to ♀, but clypeus: Fig. E, antenna: Fig. F and pronotal lamina: Fig. G. As to measurements, genitalia and sternite 8 see Pt. VI, p. 60–61.

Remarks. The holotype of the present species was collected in Tarawakan, Is. Tawi Tawi, on November 12, 1961 by the Noona Dan Expedition.

30. TRYPOXYLON TAROS SP. NOV.

The present species (♀) is closely allied to T. shakha m. known from Malaya and Borneo, but can be distinguished therefrom by the relatively much shorter and nearly wholly ferruginous gastral petiole and wholly ferruginous G2-6.

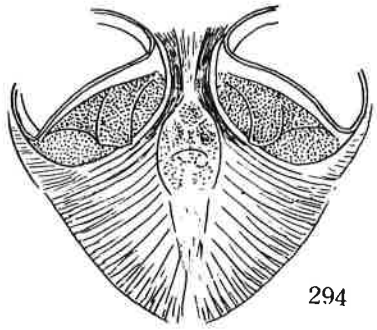
Diagnosis. ♀, about 10 mm. Antenna basally, legs and gaster nearly wholly and pronotal collar on top ferruginous, hair golden, propodeum with lateral carinae, G1 flask-shaped, mesoscutum without microsculpture, but half mat, IODs=10:8, SAT low broad nasiform, with a flat area medio-anteriorly, ASR highly raised, bicarinate on top, hind carina higher, PAF deep, flat-bottomed, clypeus with apical margin medianly produced and shallowly excavated at its sides.

Black; ferruginous are A1-2, and 3 beneath, apical margin of clypeus broadly, mandible (apically brown), mouth parts (palpi yellowish white), anterior margin of pronotum narrowly, transverse ridge of collar, tubercle (yellow), tegula and basal plates of wing, gaster except a small brown patch on apical swelling of G1 and legs except extreme bases of coxae and arolia. Hair brassy to golden, on clypeus parallel and on baso-lateral areas of propodeum not curled.

Head in frontal view with sides rounded, not convergent below, W:L=100:82, eye incision narrow, deep, subparallel-sided, dorsal margins of the pair of incisions in a line, frons gently raised, median furrow broad and shallow, SAT-ASR in vertical view: Fig. 294, dorsal view: Fig. 295, dorso-lateral view to see through PAF: Fig. 296, lateral view: Fig. 297, ventro-lateral view: Fig. 298. Median shining carina of SAT broad and broadly enlarged into a flat (but not always smooth) area at apical obliquely inclined part, usually without fovea and sometimes medianly carinated, hind carina of ASR highly raised, lamellate, strongly reflected, PAF deep, flat-bottomed, oval in cross section. Clypeus: Fig. 299, disc gently raised, apical marginal area broadly but not strongly reflected; occipital carina complete, not depressed behind buccal cavity.

HW,HL,IODv,A3,P=100,50,25,22,130. IODs=10:8. OOD,Od,POD=1,3,2. A3=AW×5. A3,4,5=10,6.5,6.5. P,Ma,M1,2(Ma),3(Ma)=100,21,8,34(28),38(38). RC=C-M. R1 moderately long, almost reaching wing apex, CV1=CV2×5-6, TCV:CV2=5:3, angle 90°-100°.

Collar transverse, anterior part narrow, ridge-like, posterior part discoloured, yellowish, lamina on side: Fig. 300; subalar area normal, area dorsalis enclosed with shallow feeble furrow, median furrow posteriorly enlarged into oviform excavation, areaapicalis with high lateral carinae, but the carinae almost not turned inwards, GSR



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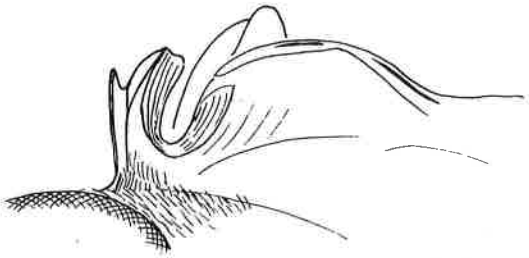

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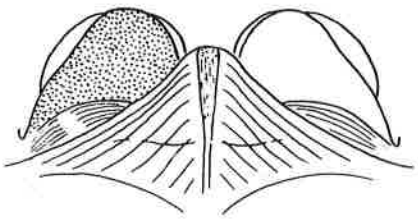

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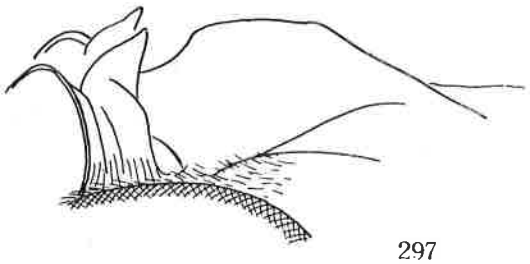

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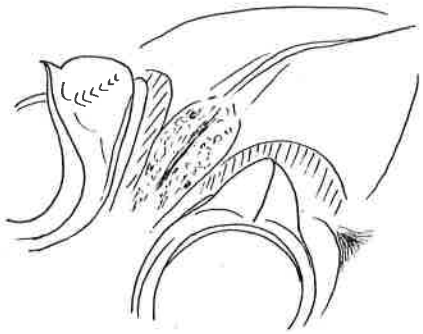

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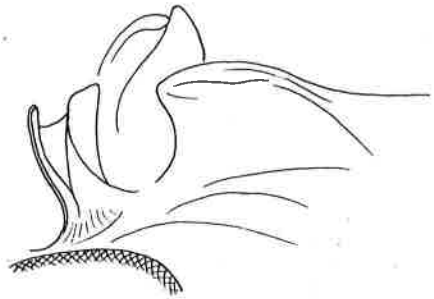

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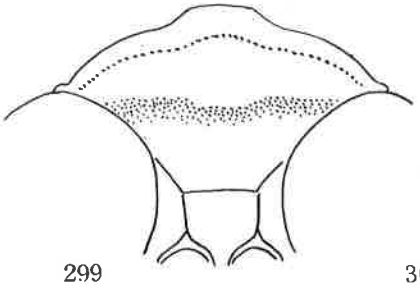


299

300

Figs. 294-301.

Trypoxylon taros

sp. nov., ♀.

roundly expanded posteriorly, amber yellow in colour; spiracles of G1 at about 1/4 from base.

Frons strongly microreticulate and closely superimposed with fine punctures, punctures so fine and so shallow and microreticulation so strong that surface appears without punctures, mesoscutum without microsculpture, but surface dull and half mat, with fairly close fine punctures. Lateral series of striae on propodeum weak, sparse, only on posterior portion defined, area dorsalis on median furrow finely closely striate, disc sparsely finely punctured (under natural condition not well visible due to covering hair), sides polished and partly covered with fairly close fine punctures.

♂, unknown.

Holotype: ♀, Luzon, Mt. Makiling, C. F. Baker (USNM).
Paratypes: 2 ♀, Luzon, Los Banos, 29. XI. 1952, 1. VIII. 1953, Townes family (AEI); 2 ♀, Mindanao, Surigao and Koalmbugan, C. F. Baker (USNM).

Remarks. In the Mindanao specimens hind femur broadly above, -tibia on outer side except base and -tarsus largely are brown, and PAF is much wider oviform in cross section (Fig. 301). In one of the specimens from Los Banos left antenna is coloured as usual, while the right is nearly completely ferruginous.

31. TRYPOXYLON FULVOCOLLARE CAMERON, 1904

Trypoxylon fulvocollare Cameron, Ann. Mag. Nat. Hist. (7) 13: 217, 1904 (♀, Assam).
Trypoxylon fulvocollare: Tsuneki, SPJHA, 8: 52, 1978 (redescr. holotype, figs.).
Trypoxylon fulvocollare: Tsuneki, Ibid., 9: 101, 1979 (♀ ♂, Assam, Laos, Malaya, figs.).
Trypoxylon fulvocollare: Tsuneki, Ibid., 11: 42, 1979 (♀, Sumatra).
Trypoxylon fulvocollare: Tsuneki, Ibid., 12: 55, 1980 (♀ ♂, Borneo).

Specimens examined:

Luzon. 4 ♀: 2 ♀, Mt. Makiling; 1 ♀, Mt. Banahao, C. F. Baker (USNM); 1 ♀, Los Banos, 23. II. 1953, Townes family (AEI).

Mindoro. 2 ♀ 3 ♂: 2 ♀ 1 ♂, Alcute Vict., 5, 8, 8. IV. 1954, H., M. & D. Townes (AEI); 2 ♂, S. Luis Calapan, 14. IV. 1954, H., M. & D. Townes (AEI).
Negros. 3 ♀: Mt. Canlaon, 3600 ft, 2, 5, 8. V. 1953, H., M. & D. Townes (AEI).
Palawan. 1 ♂, C. F. Baker (USNM).
Mindanao. 1 ♀, Butuan, C. F. Baker (USNM).

Variation of some characters.

(1) Body length.

It is usually 14-16 mm, but 1 ♀ from Luzon (Los Banos) is only 10 mm and 1 ♂ from Palawan is only 9 mm. But they are completely normal in other characters.

(2) Relative length and width of G1, 2 and 3.

Loco	Sex	P	Ma	Mi	2 (Ma)	3 (Ma)
Luzon	♀	100	27	7	44 (34)	50 (46)
Luzon	♀	100	29	8	40 (38)	50 (50)
Luzon	♀	100	30	9	40 (36)	48 (44)
Luzon	♀	100	33	11	40 (40)	44 (52)
Luzon	♀	100	34	11	48 (44)	50 (50)
Mindoro	♀	100	36	13	44 (46)	54 (54)
Negros	♀	100	34	7	44 (44)	48 (52)
Negros	♀	100	30	8	46 (40)	58 (50)
Negros	♀	100	30	7	44 (44)	48 (48)
Mindanao	♀	100	30	8	43 (42)	44 (48)
N. Borneo	♀	100	22	8	28 (30)	40 (42)
Sarawak	♀	100	24	8	30 (32)	44 (46)
Sarawak	♀	100	26	10	34 (34)	40 (46)
Mindoro	♂	100	32	12	46 (48)	54 (60)
Mindoro	♂	100	28	12	44 (40)	54 (60)
Mindoro	♂	100	32	11	44 (43)	52 (53)
Palawan	♂	100	22	8	34 (32)	40 (43)
N. Borneo	♂	100	21	7	32 (30)	40 (42)
Sarawak	♂	100	24	9	38 (36)	46 (48)

According to the results marked variation is observed in the relative length to width of G1 and G2 and 3 between individuals of the same island, for instance in the ratio of P/Ma or Ma/Mi. But the difference between Bornean and the Philippine populations is especially marked and seems to have taxomic significance.

(3) Colouration.

Standard colouration of the Philippine specimens: Black; yellow are A1 and 2, part of 3 (sometimes wholly, sometimes broadly black above, usually apical part only black above), clypeus on apical area broadly, mandible (apically reddish brown), mouth parts, pronotal collar wholly, tubercle, (anterior margin of notum narrowly ferruginous or brown), tegula and basal plates of wing, G1 except a large mark above and a small mark beneath, both on posterior portion (variable in extent above), G2 and 3, both exoept brown or blackish band at apical area, G4, 5, 6 partly or largely and legs as follows: Ground colour of legs yellow; coxae except apices and arolia always black, other dusky marks are present on mid femur above, mid T1-3 (T1 at base yellow), hind trochanter above, -femur above except base and apex, -tibia except basal ring (apex ferruginous) and T1-3 (T4-5 ferruginous or pale brown).

Luzon specimens - 4 ♀. Generally as in standard; G1 with apical swelling completely black above; in 3 specimens intermediate area between spiracles and swelling brown, in one yellow. G4 with apical dusky band as in G3, G5 variable, sometimes largely ferruginous, sometimes largely black, G6 usually wholly or nearly wholly yellow.

Mindoro specimens - 2 ♀ 3 ♂. G1 from spiracles or from somewhat before spiracles posteriorly completely black above, mid T1-5 brown, hind T1-5 black (♀). In ♂ G1 similar, but mostly black mark turns anteriorly into brown, mid tarsus wholly ferruginous or T2-3 brown, hind tibia largely yellow, but tarsus dark brown. ♂ ♀ G4 with a dusky band apically and G5-6 completely yellow or ferruginous.

Negros specimens - 3 ♀. Note-worthy is that antenna completely yellow-ferruginous, without black; mid tarsus and hind trochanter wholly yellow, brown mark on mid femur small and very pale, G1 only on apical swelling black above, G2-5 each with a narrow dusky band posteriorly and G6 completely ferruginous.

Palawan specimen - 1 ♂. Broadly black: A3 completely black, fore femur medianly

brown above, mid trochanter wholly, -femur except apex, -T3-5 dark brown, hind trochanter and femur nearly completely, -tibia except both ends and -tarsus wholly black; G1 except base beneath and sides wholly, G2-3 except base and apex, G4-5 except discoloured posterior margins of tergites and G6 completely black.

Mindanao specimen - 1 ♀. As in standard except that G1 from base till apical swelling brown - dark brown and swelling black.

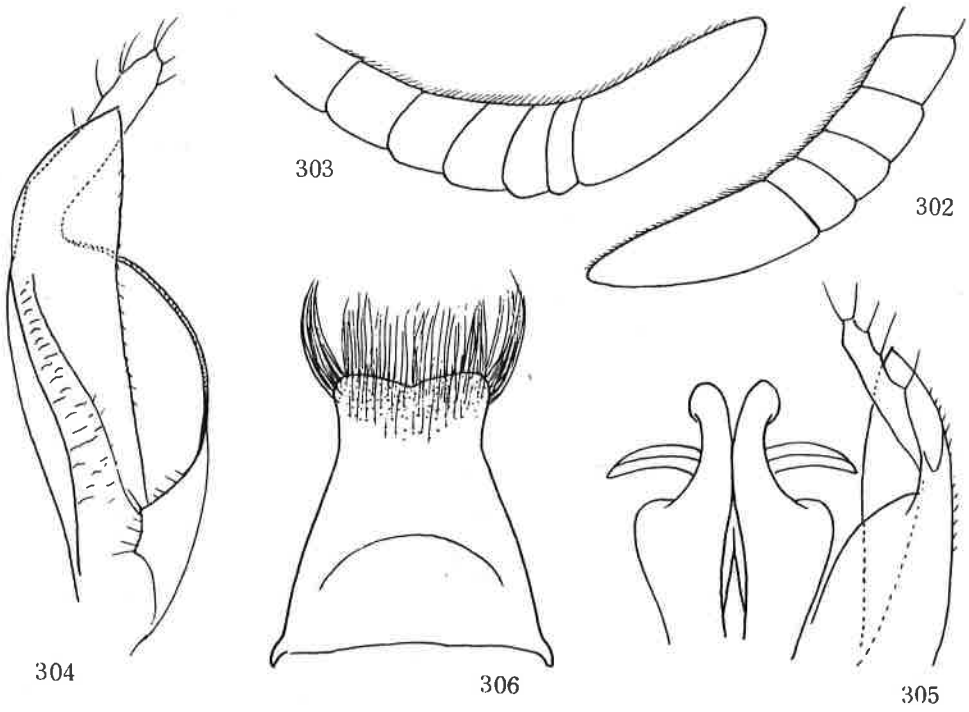
Sarawak specimens - 2 ♀ 1 ♂ (for reference). A1, 2, fore leg, coxae, collar and prosternum yellow. Legs yellow, with following black: arolia, mid T1-5 or 2-5, hind trochanter wholly, -femur on inner side, -tibia on inner side except base, -T1-5. G1 wholly above, G2,3 with a large mark above, G4,5 each at base black; rest of G4,5 and G6 yellow or ferruginous.

North-Borneo - 1 ♀ 1 ♂. A1,2, fore leg yellow, but coxae black and collar on top ridge alone yellow. Black on legs are coxae and arolia, mid femur above, -T1-5 or 3-5 and hind trochanter and femur largely, -tibia on outer side except base and T1-5 except articulations.

The specimen from Palawan is in colour very close to North Bornean specimens.

The Negros specimens, especially in regard to the antennae seem to be constant and exceptional among the Philippine specimens. Possibly they form a weak local race.

The Philippine specimens of the present species are, as a whole, characteristic in that the gastral petiole is comparatively short and robust. It is appr. only thrice as long as broad at maximum. In the specimens from other areas, from India till Borneo it is usually 5-6 times as long as broad at the maximum.



Figs. 302-306. Trypoxylon fulvocollare Cameron, ♂

In Pt. III of the present series I described the male of the present species for the first time (SPJHA, 9: 101, 1979) and illustrated a strange antenna in which penultimate joint is exceptionally long, appr. as long as two preceding joints united. In the male specimens of the Philippines and Borneo such a curious antenna is never met with. A12 is slightly shorter than A11 and A13 is slightly longer than A9-12 united, in some condition appears as long as A9-12 (Figs. 302 in a Mindoro specimen, 303 a Palawan specimen). Possibly the condition shown with Fig. 390 of Pt. III is aberrant in which A11 and 12 are fused together.

Genitalia of the Bornean and Philippine (Mindoro) males are comparatively examined. They are similar in structure to those of the Laotian male. Figures of the apical parts of paramere given in Pt. III (Figs. 392, 393) are somewhat obliquely observed. Here the from vertically seen is given (Figs. 304, ventral, 305, dorsal). Of the two lobes of paramere at apex the ventral one is broader and shorter than the dorsal that is sparsely fringed with hair. Sternite 8 in the Mindoro specimen: Fig. 306, apparently different considerably from that of the Laotian male (Fig. 391 of Pt. III), but possibly due to different condition of desiccation.

32. TRYPOXYLON LUTEOCOLLARE SP. NOV.

Apparently very similar to T. fulvocollare Cameron, but in the present species SAT at apical margin provided with a transverse carina just as in T. rufiventre m.

Colouration in ♀ is just as in the standard from of the Philippine specimens of T. fulvocollare, but gastral petiole on posterior half black above and with a small black mark before apex beneath (G2-4 with a black band on each posterior half and G5-6 wholly ferruginous), in ♂ A1, 2 and basal half of 3 yellow, mid leg except base of coxa and arolium and hind trochanter and tibia completely yellow or ferruginous, G1 as in ♀, G2 with a narrow medianly interrupted brown band before apex, G3-7 wholly ferruginous. Hair golden, on clypeus parallel (♀ ♂).

♂. 9.5 mm. Head in frontal view with sides rounded, not narrowed towards clypeus, vertex only slightly depressed, tops of hind ocelli and of eyes in a line, eye incision broad and strongly narrowed towards bottom, dorsal margin distinctly inclined towards apex, frons gently raised, medial furrow narrow and acute, disc only weakly inclined towards it. SAT low broad nasiform, anteriorly margined with duplicated transverse carinae, ASR expanded obliquely forwards, with top below level of top of SAT and acutely bicarinate, both carinae stretched inwards on to upper part of IAA and there connected with those of other side, thus forming the anterior duplicate transverse carina of SAT, hind carina deeply roundly depressed at IAA, while fore carina nearly horizontal, apparent PAF shallow, wide V-shaped in cross section and curving down outwards, the structure seen obliquely from above and side: Fig. 307, in dorso-lateral view to see through apparent PAF: Fig. 308, in lateral view: Fig. 309, in ventro-lateral view: Fig. 310. Clypeus: Fig. 311, disc broadly, gently roundly elevated, with apical area weakly reflected. Antenna with ultimate joint markedly long, appr. as long as 5 preceding joints united (Fig. 312).

HW,HL,IODv,A3,A13,P=100,50,25,13,32,98. IODs=10: 8.5. OOD,Od,POD=2,5,3. A3=AW× 1.8. A3,4,5≒10,9,8. A13=BW×3.8 and strictly >A8-12 but <A7-12. P,Ma,Mi,2(Ma),3(Ma) =100,32,10,40(48),40(60).

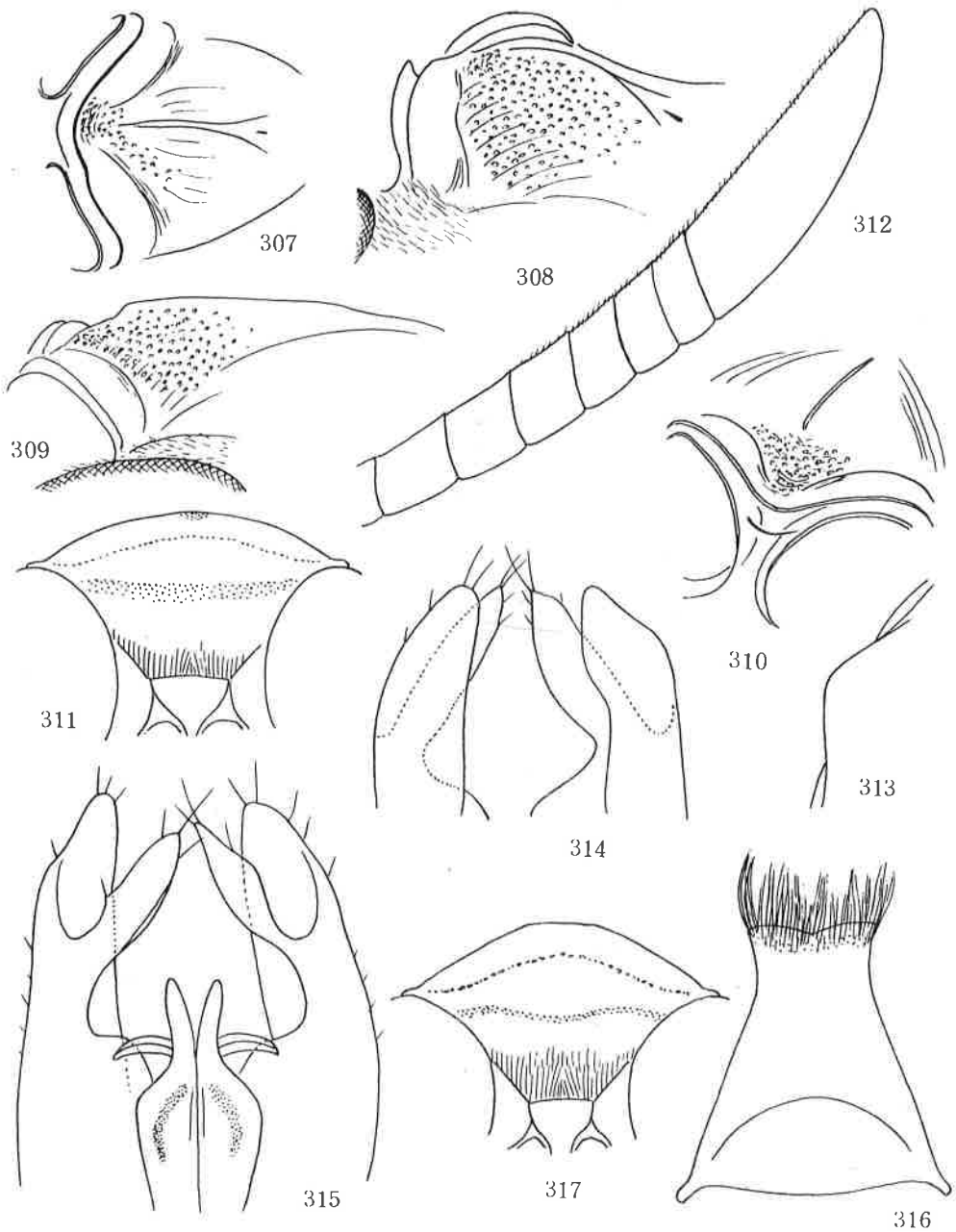
Collar transverse, with posterior part and tubercles yellow, lamina on side: Fig. 313, subalar area of mesopleuron with outer margin edged on posterior half, not expanded; propodeum with lateral carinae, the carina in lateral view curved, apex not directed towards lateral carina of area apicalis, this highly raised, anteriorly lowering and curving inwards to meet with that of other side, completing the area apicalis, GSR obliquely roundly produced, amber-yellow in colour. In fore wing RC=B-C, R1 short, CV1≒CV2×5, TCV:CV2≒5:4, TCV gently incurved, angle about 100°.

Genitalial structure and the form of 8th sternite are very similar to those of T. fulvocollare. Slight differences are that apical two lobes of paramere are similar in length to each other, the ventral one of the lobes is less pointed at apex and more sparsely fringed with hair and the dorsal one is slightly wider than in fulvocollare (Figs. 314, apical part of genitalia in ventro-lateral view, 315, in dorsal view; cf. Figs. 304 and 305 in fulvocollare). Volsella spatulate and sparsely fringed with hair on outer margin of apical part, as in fulvocollare, penis valve also very similar, slight difference is that here the apices of the pair are attenuate apically. Sternite 8: Fig. 316 (cf. Fig. 306), only slightly more narrowed towards apex and more pointed at apico-lateral angles than in fulvocollare.

Frons distinctly microcoriaceous and strongly closely superimposed with punctures, SAT closely covered with shallow punctures, at medio-apical area coarsely rugoso-punctate, mesoscutum without microsculpture, shining, punctures fine, fairly close, but PIS 2-3 times PD, area dorsalis at baso-lateral areas covered with hair-bearing punctures, rest of the area smooth and polished, series of striae along lateral carinae weak and indistinct, mixed with hair-bearing punctures (the place under natural condition completely covered with golden hair), area apicalis shining, but not smooth, sides sparsely covered with hair-bearing points.

♀. 11 mm. A1-3 yellow. In structure and punctuation similar to ♂, but anterior transverse carinae of SAT weaker than in ♂, though similarly duplicated, eye incision comparatively broad, but somewhat narrower than in ♂ and less narrowed towards bottom, dorsal margins of pair of incisions nearly in a line; clypeus similarly anteriorly rounded out, only somewhat more produced (Fig. 317).

In frontal view W:L of head 100:90. HW,HL,IODv,A3,P=100,52,25,22,120. IODs= 10:9. OOD,Od,POD=2, 6.5, 3.5. A3=AW×3.5. A3,4,5≒10, 6.5, 6. P,Ma,Mi,2(Ma),3(Ma) =100,32,9,44(38),54(50). Venation generally similar, also punctuation, but the punctures on mesoscutum larger and PIS≒PD (at antero-lateral areas), lateral series of striae on propodeum somewhat more distinct.



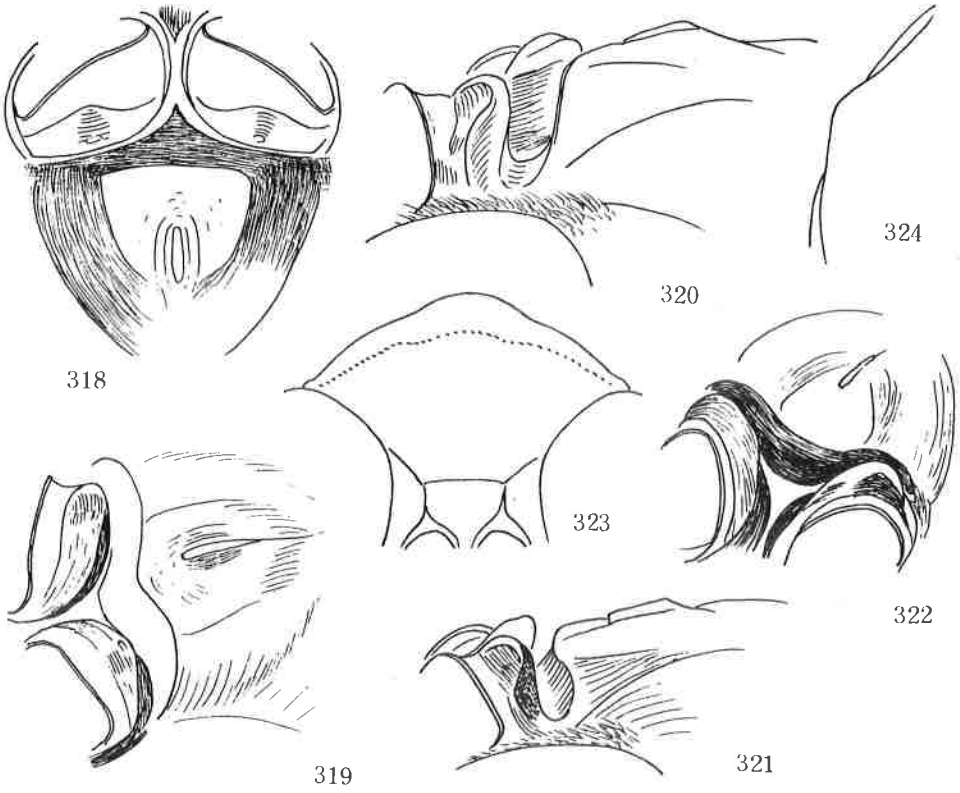
Holotype: ♂, Mindanao, Butuan, C. F. Baker (USNM).
Paratype: 1 ♀, Luzon, Mt. Makiling, 19. VI. 1962, G. L. Gressitt, M. Thompson and A. Garcia (BPBM).

33. TRYPOXYLON CIDICUM SP. NOV.

♀. Length possibly 10-12 mm (gaster from G3 apically lacking). Characteristic in the low, flat and subquadrate SAT carrying a mound of carina in middle and in the deep, flat-bottomed and nearly transversely located PAFs.

Black, apical glabrous part of clypeus semitransparent castaneous, mandible (apically reddish brown) and palpi yellow; legs brown (originally?), apically paler, posterior part of collar, tegula and basal plates of wing ferruginous, G1 and 2 somewhat brownish ferruginous, apical swelling of G1 and a mark on G2, both above, dark brown. Hair silvery, on clypeus at base somewhat convergent towards medial line, but as a whole nearly parallel.

Head in frontal view with lateral margins rounded, slightly convergent towards clypeus, W:L=100:87, vertex not depressed, eye incisions moderate in width and distincly narrowed towards bottom, dorsal margin somewhat inclined outwards. Frons gently elevated, median furrow very weak, surface almost flat, but with a smooth shining line in middle, SAT in vertical view: Fig. 318, seen obliquely from above and left side: Fig. 319, in dorso-lateral view to see through PAF: Fig. 320, in lateral view: Fig. 321, in ventro-lateral view: Fig. 322. SAT with apical margin transverse, nearly straight and bluntly edged apical smooth inclination to IAA very acute, PAF located nearly transverse, as a result Figs. 320 and 321 are not so dissimilar as in most



Figs. 318-324. Trypoxylon cidicum sp. nov., ♀

other species, SAT medianly gently raised, forming an elliptic mound with the stout carina on top, ASR nearly as high as SAT, bicarinate on top, fore carina acute, pale brown in colour, hind carina thick, with posterior aspect flatly (somewhat hollowed) perpendicularly inclined to PAF (Fig. 320). Clypeus: Fig. 323, disc at base gently raised, at apex distinctly reflected, occipital carina complete, slightly roundly depressed behind buccal cavity.

HW,HL,IODv,A3,P=100,54,28,20,134. IODs=10:8. OOD,Od,POD≒1,3,2. A3= AW×3.5. A3,4,5=10,7,6. P,Ma,Mi,2(Ma),3(Ma)=100,21,7,40(23),--(--). RC=C, R1 short, CV1=CV2×4.3. TCV:CV2≒5:3, angle about 110°. TCV gently incurved.

Collar with anterior part narrow, but considerably incrassate towards sides, dorsal line in frontal view gently up-curved, medianly weakly angulate, lamina on side: Fig. 324, subalar area normal, propodeum without lateral carinae, area dorsalis with shallow lateral furrows, area apicalis highly carinated on each side, carinae not turned inwards at anterior end, GSR subtriangularly elevated, not discoloured. G1 flask-shaped, spiracles at about 1/4 from base.

Frons distinctly microcoriaceous and sparsely superimposed with fine punctures, mesoscutum closely punctured, punctures somewhat larger than those on frons, PIS≒PD and rather feebly microcoriaceous. Propodeum with distinct lateral series of striae, area dorsalis with median furrow transversely striate, with disc rugoso-punctate, sides fairly closely covered with weak punctures except femoral sinus which is distinctly impressed.

♂, unknown.

Holotype: ♀, Luzon, Mt. Makiling, C. F. Baker (USNM).

34. TRYPOXYLON STRIOLATUM TSUNEKI, 1979

Trypoxylon striolatum Tsuneki, SPJHA, 9: 113, 1979 (♀, Laos, Singapore, figs.).
Trypoxylon striolatum: Tsuneki, Ibid., 11: 54, 1979 (♀, Sumatra, Java).
Trypoxylon tawitawiense Tsuneki, Steenstrupia, 4: 86, 1976 (Is. T witawi) (♀, nec ♂, holotype is ♂)
Trypoxylon striolatum: Tsuneki, SPJHA, 12: 74, 1980 (♀ ♂, Borneo, including black-gastered form).

Specimens examined:

Biliran. 1 ♀, C. F. Baker (USNM).
Samar. 3 ♀, C. F. Baker (USNM).
Busanga. 5 ♀, 4 km North of San Nicolas, 21, 22, 23, 26, 26. V. 1962, H. Holtmann, Malaise or light trap (BPBM).
Palawan. 1 ♀, Mt. Beaufort, 17. IV. 1968, M. D. Delfinado (BPBM).
Mindanao. 3 ♀, Surigao and Butuan, C. F. Baker (USNM).
Basilan. 2 ♀, C. F. Baker (USNM).
(Tawi Tawi - 1 ♀, Tarawakan, 3. XI. 1961, Noona Dan Exp. - ZMUC).

Remarks. T. striolatum is one of the difficult species for identification, because of the variability of its characters on the one hand — the form of the apical margin of the clypeus (inborn and acquired), the degrees of the frontal elevation, the colour of the gaster and the legs, the strength of the microsculpture on the mesoscutum and the striation on the area dorsalis — and the existence of some closely resembling different species on the other.

In all the specimens newly observed G2 and 3 are ferruginous or red and always black maculated above; in Biliran, Busuanga and Palawan specimens G2 and 3 are nearly wholly black above, while in those from other islands maculae are much smaller.

Ground colour of mid tarsus is pale yellowish white, in the specimens from Biliran, Samar and Mindanao only apically somewhat brownish, in those from Busuanga, T3-5 or T4-5 dark brown, while in those from Palawan and Basilan T3-5 nearly black. But hind tarsus is always black or dark brown, only T4 sometimes somewhat pale.

Measurements in one of the Samar specimens (♀):

HW:HL in frontal view =100:90. HW,HL,IODv,A3,P=100,52,23,24,154. IODs=10:8. OOD,Od,POD=1,5.5,3.5. A3=AW×4. A3,4,5=10,7,6. P,Ma,Mi,2(Ma),3(Ma)=100,20,7,32(22),37(29). In fore wing RC=C, R1 very short, CV1=CV2×5.5. TCV:CV2≒5:3. TCV nearly straight, angle roughly about 110°.

Variations in the frontal, clypeal, mesoscutal and propodeal characters seem to be greater between individual than between island-populations.

As to general variation of characters of the present species and the characters of the male see also Pt. VI (p. 74-76) of the present paper.

35. TRYPOXYLON ROHWERIELLUM SP. NOV.

Very closely resembles some form of T. striolatum, but in the present species hind tarsus from apex of T1 to T5 white and gaster from apex of G1 to G4 ferruginous red, usually with a variable blackish mark on G2, 3, 4.

Structure of frons, SAT-ASR, clypeus, antenna, pronotum with lamina and propodeum with its characteristic sculpture similar to those of the compared species. Length 9-12 mm. Measurements of the holotype (♀):

W:L of head in frontal view 100:91. HW,HL,IODv,A3,P=100,50,23,24.144. IODs=10:8. OOD,Od,POD÷1,3,3. A3=AWx4.4. A3,4,5=10,6.5,6. P,Ma,Mi,2(Ma),3(Ma)=100,21,7,34(26),36(55). RC=C. R1 very short, VV1=CV2x5.5. TCV:CV2=5:3, TCV nearly straight, angle about 110°.

♂, unknown.

Holotype: ♀, Luzon, Los Banos, C. F. Baker (USNM).

Paratypes: 18 ♀: Luzon 16 ♀, Samar 2 ♀:

3 ♀, Los Banos, 2 ♀, Baguio, 1 ♀, Mt. Bahahao, 5 ♀, Mt. Makiling, C. F. Baker (USNM); 2 ♀, Los Banos, 1916 and 1917, F. X. Williams (BPBM); 2 ♀, Los Banos (Botanical Garden), 30. III. 1978, T. Murota; 1 ♀, Los Banos, 2-5. VIII. 1979, T. Murota (Coll. Murota); 1 ♀, Los Banos, 31. III. 1978, C. Nozaka (Coll. Nozaka); 2 ♀, Asin Hot Spring, 600 m, 16 km from Baguio, 2, 5. I. 1958, T. Murota (Coll. Murota).

2 ♀, Is. Samar, C. F. Baker (USNM).

Remarks. This species may be a geographical form of T. striolatum living in Is. Luzon. The fact that the typical form of striolatum has not been collected from Luzon is very favorable for this consideration. The occurrence of striolatum and rohweriellum at the same time on the Island Samar may be explained by the fact that the Island is located at the intermediate region of distribution of both forms and the mixed is possible. On the other hand, however, the fact mentioned last can also support the possibility of the independence of both forms from each other. At any rate, the male of rohweriellum remains still undiscovered and the future examination of this sex may give the final conclusion to the problem above mentioned. Until that time it seems better to treat rohweriellum as a distinct species, because the wholly black of the hind tarsus has been considered one of the reliable characters of striolatum and rohweriellum disagrees in this respect.

36. TRYPOXYLON CANLAON SP. NOV.

♀. About 12 mm. Very closely resembles the black-gastered form of T. striolatum but in the present species hind tarsus except arolium completely whitish. In this respect it is much closer to preceding rohweriellum, but in the present species the lateral carinae of propodeum are absent and the gaster is completely black.

Main comparable characters: Frontal elevations somewhat lower than in most of striolatum, dorsal elevation of collar towards middle in frontal view slightly gentler than in this, mesoscutum distinctly microcoriaceous and distinctly superimposed with comparatively large punctures, larger than in striolatum, with PIS 1-2 time PD. Propodeum without lateral carinae, area dorsalis weakly margined with shallow furrow, GSR not raised on apical margin. For tibia except inside and outer apical area and mid and hind tibiae at base ferruginous, fore and mid T1-5 similar in colour to hind one, but T5 always slightly brownish. Measurements:

Head in frontal view with ratio of W:L=100:90. HW,HL,IODv,A3,P=100,52,24,24,158. IODs=10:8.5. OOD,Od,POD÷2,5,4. A3=AWx4.4. A3,4,5=10,6.5,6. P,Ma,Mi,2(Ma),3(Ma)=100,18,7,30(25),34(29). RC=B-C, R1 short, CV1=CV2x7. TCV:CV2÷5:3. Angle roughly about 120°.

♂, unknown.

Holotype: ♀, Negros, Mt. Canlaon, 3800 ft, 2. V. 1953, H., M. and D. Townes (AEI).

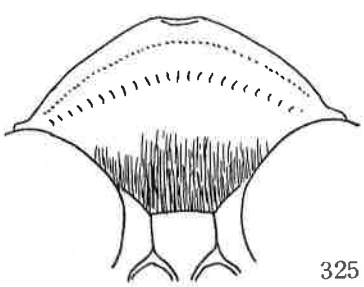
Remarks. The same problem as mentioned about rohweriellum is also concerned here,

especially, in addition, whether it is a form of striolatum or rohweriellum that lives in high altitude or not. To settle the problem abundant material, especially the male, is necessary.

37. TRYPOXYLON LAGUNAENSE SP. NOV.

The present species closely resembles T. canlaon, but has G1 and 2 on sides and beneath ferruginous red (extreme apex and base beneath of G1 also ferruginous), fore T5 brown, mid and hind T5 black; further, clypeus at base not elevated, with hair parallel, apical reflection similar, but apical margin (Fig. 325) not medianly produced and not bevelled and area dorsalis almost wholly without striae (median furrow and posterior part of the area very faintly transversely striate).

Frontal elevations stronger than in canlaon (slightly stronger than in striolatum also which has stronger elevations than canlaon), IODv relatively somewhat wider and IODc relatively narrower (IODs=10:6), mesopleuron almost without microsculpture (in striolatum of the Philippines and canlaon distinctly microcoriaceous, but weaker than on scutum), lateral areas outside area dorsalis and posterior inclination without transverse striae, but propodeum with the series of striae on each lateral margin, GSR roundly highly elevated (in the compared two not elevated), wing venation generally similar, but angle between TCV and CV2 somewhat smaller.



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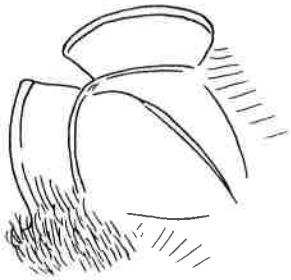

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Figs. 325-328.
Trypoxylon lagunaense sp. nov., ♀.

Head in frontal view with ratio of W:L=100:88, vertex not depressed, eye incision moderate in width, distinctly narrowed towards bottom, with dorsal margin somewhat inclined outwards (in the compared two narrow, subparallel-sided, with dorsal margin horizontal), SAT-ASR closely resembles that of the compared two, but strictly PAF distinctly up-curved (in canlaon and striolatum generally up-curved, strictly, however, in middle area of PAF nearly flat-bottomed), in dorso-lateral view to see through PAF: Fig. 326, seen from more above: Fig. 327. Occipital carina complete, deeply depressed behind buccal cavity.

HW,HL,IODv,A3,P=100,50,28,25,156. IODs=10:6. OOD,Od,POD=2,3,3. A3=AW×4.3. A3, 4,5÷10,7,6. P,Ma,Mi,2(Ma),3(Ma)=100,20,6,32(26),30(32). RC=B, but close to C, R1 short, CV1=CV2×6.5. TCV:CV2÷7:4. Angle about 105°.

Frons distinctly microcoriaceous and sparsely superimposed with fine punctures, top areas of elevations not shining. Microsculpture of mesoscutum weaker than on frons, punctures similar in size, but closer, PIS÷PD.

♂, unknown.

Holotype: ♀, Luzon, Prov. Laguna, Los Banos, 15. III. 1953, Townes family (AEI)
Paratype: 1 ♀, Mindoro, Alcate Viet., 6. IV. 1954, H., M. and D. Townes (AEI).

38. TRYPOXYLON ASHMEADI BALTAZAR, 1966

Trypoxylon elongatum Ashmead, Proc. U. S. Nat. Mus., 28: 961, 1905 (♀, Philippines: Manila)(nec Smith, 1856).
Trypoxylon ashmeadi Baltazar, Pac. Ins. Monogr., 8: 336, 1966 (nom. nov.).
Trypoxylon elongatum (Ashmead, 1905 = T. ashmeadi Baltazar): Tsuneki, SPJHA, 7: 72, 1978 (redescr. of holotype, figs.).

Specimens examined:

Luzon. Mt. Makiling, 10 ♀ 4 ♂, C. F. Baker (USNM); 6 ♀, 5000 ft, 21. IV. 1932 F. C. Hadden (CAS). Mt. Banahao, 1 ♀, C. F. Baker (USNM); Mt. Montalban, 1 ♀, Wa-Wa Dam, 150-200 m, 8-12. III. 1965, H. M. Torrevillas (BPBM); Mt. Isarog, Camerines Sur, 750-850 m, 1 ♀, 8-9. V. 1963, H. M. Torrevillas (BPBM); Subig Bay, V. 1907, J. C. Thompson (CAS); Baguio, 1 ♂, Baker (USNM); Manila, 3 ♀, R. Brown (USNM); 1 ♂, Bur. Agr.), C. R. Jones (USNM); 4 ♂, 3. VIII. 1952, 10. I. 1953, 18. II. 1953, Townes family (AEI). Los Banos, 6 ♀ 3 ♂, C. F. Baker (USNM); 6 ♀ 1 ♂, 1916 (♂), VIII, VIII. 1916, IX, IX. 1916, 1917, VII-VIII. 1917, XI. 1921, F. X. Williams (BPBM); 1 ♀, --, F. X. Williams (USNM); 1 ♀, C. F. Baker (Mus. label 1913-335)(BM-NH); 1 ♀, VI-VII. 1917, F. X. Williams (BMNH); 5 ♀, 27. IX. 1952, 4. II. 1953, 6. IX. 1953, 30. V. 1954, H. & M. Townes or Townes family (AEI); 5 ♀ 8 ♂, 30-31. III. 1978, T. Murota (Coll. Murota); 2 ♀ 4 ♂, same day, C. Nozaka (Coll. Nozaka); 2 ♀, 2-5. VIII. 1978, H. Kurokawa (Coll. Kurokawa); 3 ♀ 1 ♂, 31. III. - 2. IV. 1979, T. Tano (Coll. Tano); Antipolo, 1 ♀, 6. IX. 1952, Townes family (AEI); Pagsanjan, 2 ♀, 2. IV. 1978, 2 ♀ 2 ♂, 7-9. VII. 1978, T. Murota (Coll. Murota); 2 ♀ 6 ♂, 7-9. VIII. 1978, H. Kurokawa (Coll. Kurokawa). St. Domingo, 2 ♀ 2 ♂, 17. VIII. 1978, C. Nozaka (Coll. Nozaka); Tabaco, 4 ♀, 19. VIII. 1978, T. Murota (Coll. Murota). Hidden Valley Spring, Alaminos, 1 ♀ 1 ♂, 3-4. IV. 1978, T. Tano; 7 ♀, same day, T. Murota. Maguilion, 1 ♀, 4. I. 1980, T. Murota (Coll. Murota).

Mindoro. San Jose, 1 ♀, 9. I. 1945, E. S. Ross (CAS); Alcate Vict. 1 ♀ 1 ♂, 6, 8. IV. 1954, H., M. & D. Townes (AEI). S. Luis Calapan, 1 ♀ 1 ♂, 13. IV., 14. IV. 1954, H, M. & D. Townes (AEI).
Samar. 38 ♀, --, C. F. Baker (USNM).
Tayabas. 1 ♂, Marinao, --, C. F. Baker (USNM).
Panay. 2 ♀ 1 ♂, Northwest district, --, C. F. Baker (USNM).
Sibuyan. 7 ♀ 3 ♂, --, C. F. Baker (USNM).
Leyte. Tacloban, 1 ♀, C. F. Baker (USNM); 3 ♀, Polo, Naga-Naga, 22, 22, 29. III. 1978, J. Kojima.
Biliran. 2 ♀, C. F. Baker (USNM).
Cebu. Cantabaco, 1 ♀ 1 ♂, 30. III. 1979, H. Kurokawa (Coll. Kurokawa); Argao, 31. III. 1979, T. Tano (Coll. Tano).
Negros. Cuernos, 4 ♀ 1 ♂, C. F. Baker (USNM); Mt. Canlaon, 3600 ft, 28, 29, 30. IV., 2. V. 1953, H., M. & D. Townes (AEI). (see also addenda given in Remarks).
Mindanao. Cagayan, 1 ♀, Dapitan, 15 ♀ 5 ♂, Butuan, 5 ♀ 1 ♂, Surigao, 4 ♀ 2 ♂, Davao, 3♀, all C. F. Baker (USNM). Z. del Sur, Milbuk, 9-10. VIII. 1958, H. E. Milliron (BPBM). Lanao, 48 km E. of Dansalan, 750 m, 11. VI. 1958, Jungle along stream, H. E. Milliron (BPBM).

The present species is characteristic in having well developed frontal elevations on both sides of the medial furrow - nearly hemispherical - and easily separable from other congeners, otherwise it is very similar to the common species, T. petiolatum Smith.

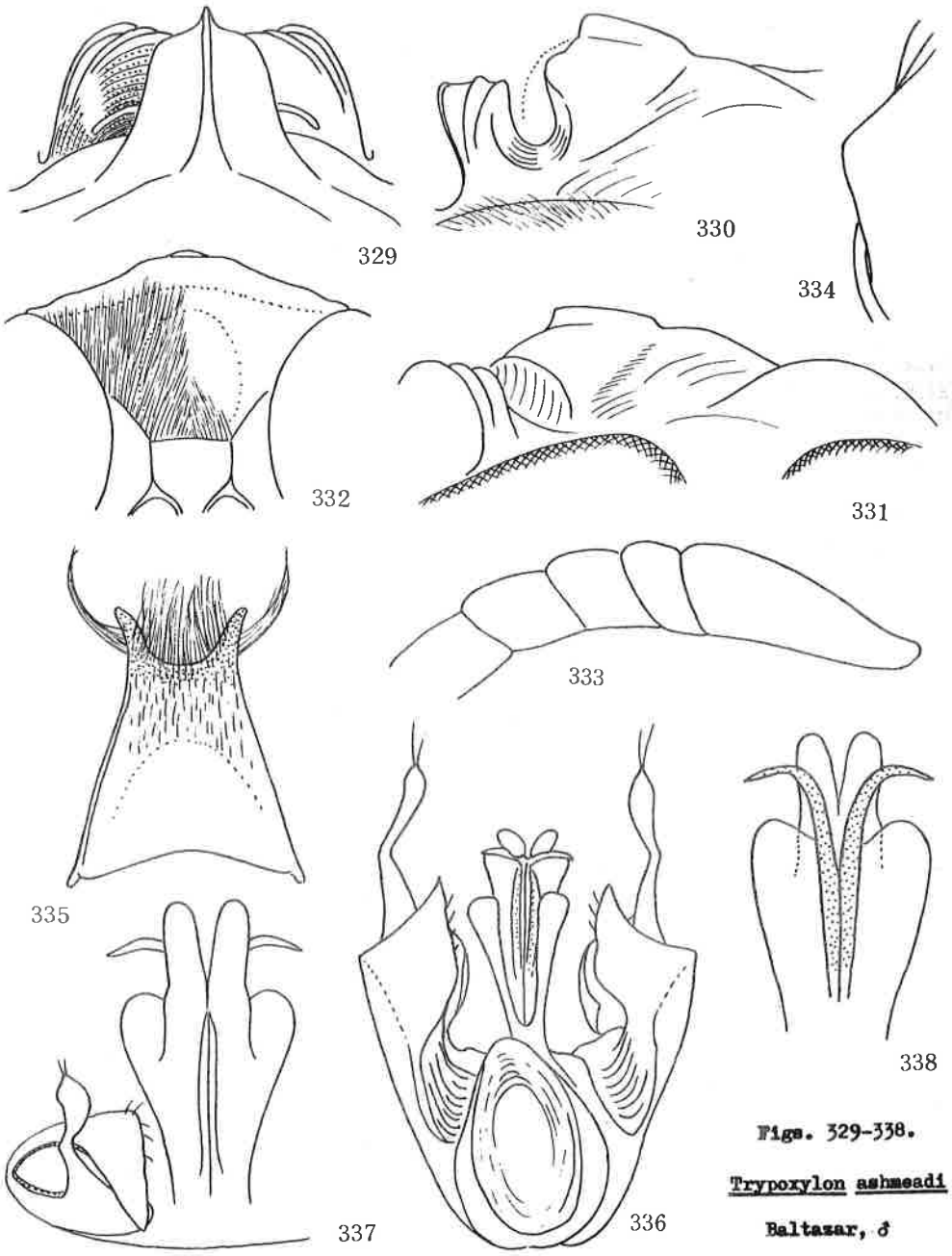
Description of ♂

Excepting the frontal elevation and SAT the male also very closely resembles T. petiolatum Smith, even in the structure of the genitalia.

Length 10-15 mm, usually 12-13 mm. Black; mandible medianly broadly ferruginous and palpi ochre yellow, tegula transparent brown, basal plates of wing dark brown, G2-3 ferruginous and variously black maculated, in the bright coloured case with a small (less than half of tergite) brown mark on each above, in the melanic case nearly wholly black, with various intermediate colouration, most usually largely black above and largely ferruginous beneath, legs black and fore tibia and tarsus somewhat brownish, but tibial spurs alone always whitish, antenna not ferruginous beneath. Hair silvery, on clypeus at base gently convergent towards medial line.

Head in frontal view roundly convergent below, W:L=100:80, vertex slightly depressed, tops of hind ocelli and eyes in a line, eye incision comparatively narrow

and narrowed towards bottom, dorsal margin somewhat inclined outwards, frontal elevations markedly highly and roundly raised as in ♀, SAT high nasiform, acutely carinated on the bridge, ASR raised, but much below level of SAT top, not expanded anteriorly, bi- or tricarinate on top, PAF very deep, flat-bottomed, U-shaped in cross section (in this character different from ♀, in ♀ PAF shallow, up-curved, V-shaped in cross section, the state of difference between sexes is also similar to the case of petiolatum !), the structure in dorsal view: Fig. 329 (the covering hair must be removed), in dorso-lateral view to see through PAF: Fig. 330 (cf. Fig. 339 in ♀), in



Figs. 329-338.

Trypoxylon ashmeadi

Baltazar, ♂

lateral view: Fig. 331. Clypeus: Fig. 332 (cf. Fig. 340, ♀), apical margin characteristic, apical part of antenna: Fig. 333 (also similar to that of petiolatum), occipital carina complete, somewhat weaker on head beneath, but not incised nor depressed behind buccal cavity.

HW,HL,IODv,A3,A13,P=100,45,28,19,25,148. IODs=10:7.5. OOD,Od,POD≒1,1,1. A3=AW× 2.7. A3,4,5≒10,8,7.5. A13=BW×2.8 and slightly longer than A10-12. P,Ma,Mi,2(Ma),3 (Ma)=100,16,7,35(20),38(24). RC=B, R1 short, CV1=CV2×4.5-5. TCV:CV2≒5:4, angle about 90°.

Anterior part of collar narrow, but not linear, slightly enlarged laterally, dorsal line roundly but subtriangularly raised, with top bluntly pointed and somewhat incrassate, lamina on side: Fig. 334, subalar area of mesopleuron normal; propodeum without lateral carinae, area dorsalis usually with weak lateral furrows, sometimes without, when present the furrow anteriorly weaker and indistinct, area apicalis incompletely enclosed with carina, the carina more or less opened at dorsal middle, GSR not expanded. G1 flask-shaped.

Sternite 8: Fig. 335. Genitalia in ventral view: Fig. 336, of the apical 2 lobes of paramere the ventral shorter one is strictly somewhat wider than in petiolatum, rather closer to that of bicolor and much slenderer and more pointed at apex than in petiolatum (in the figure the lobe is turned backwards at apical half and appears shorter than in reality, but the apical area is likely to shrink or bend when taken out and mounted). Penis valve characteristic in the form of apical pair of lobes, in the state of shoulder and in the location and form of sickle-shaped appendages (Figs. 337, dorsal, with right paramere, 338, ventral).

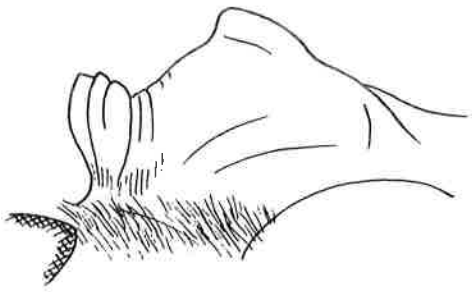
Remarks. In the female usually all tibiae at base and fore tibia in front also brown, tibial spurs, fore T1-5 or 1-4 and mid T1-2 yellowish white and antennal flagellum largely brown or ferruginous beneath. Sometimes, however, tibiae completely black and fore T1-2 alone whitish (T3-5 brown), and antenna also completely black.

The specimens from Luzon, Mindoro, Samar, Biliran, Sibuyan, Panay and Mindanao are all with the normal colouration. But in the specimens recently (1979) collected by the Japanese entomologists in the Island of Cebu the legs are completely black, spurs and T5 alone brownish and in those of Negros mostly fore T1 and spurs brown and rarely fore T1 ferruginous, T2-5 brown and mid T1-2 pale brown. The specimens collected by them:

Negros. Mambucal, 12 ♀ 2 ♂, 2-3. IV. 1979, T. Tano; 2 ♀ 1 ♂, same date, H. Kurokawa; 2 ♀, same date, C. Nozaka; Taytay beach, 1 ♀ 1 ♂, 4-5. IV. 1979, T. Tano; 1 ♂, same date, H. Kurokawa.

While, the 4 specimens collected by Townes family in Negros are normal as in the Luzon ones in the colour of the legs. Both series are collected in the similar season (April or May) and, therefore, the difference may be due to the climate of the year. The 4 specimens collected in Negros by C. F. Baker (dates unknown) show the following colouration: In all of them mid tarsus dark brown or black, fore tarsus in one of them completely ferruginous, but in the rest T1-2 ferruginous and T3-5 brown.

As to the colouration of G2-3 similar variation is observed to the case in the male. The specimens recently collected by the Japanese hymenopterists in summer in Luzon have the gaster broadly or nearly wholly black above and in a considerable part of them almost completely black (only somewhat brownish beneath in part).



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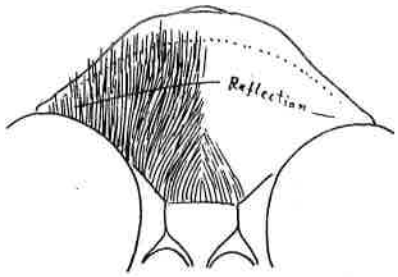

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Figs. 339-340. Trypoxylon ashmeadi Baltazar, ♀

Measurements on one female specimen from Luzon (18 mm length):
W:L of head in frontal view =100:84. HW,HL,IODv,A3,P=100,48,26,28,176. IODs=10:7.5. OOD,Od,POD=1,1,1. A3=AWx5.5. A3,4,5≒10,7,6. P,Ma,Mi,2(Ma),3(Ma)=100,17,6,32(18),32(24). RC=B, R1 short, CV1=CV2x5, TCV:CV2≒5:4, TCV incurved, CV2 downcurved, angle about 90°.

Head in frontal view vertex more distinctly depressed than in ♂, eye incision narrower, subparallel-sided, with dorsal margin horizontal.

39. TRYPOXYLON PETIOLATUM SMITH, 1857

Trypoxylon petiolatum Smith, J. Proc. Linn. Soc. London, Zool., 2: 105, 1857 (♀, Borneo).
Trypoxylon bicolor: Tsuneki, SPJHA, 8: 1, 1978 (partim).
Trypoxylon petiolatum: Tsuneki, Ibid., 8: 6, 1978 (redescription of lectotype).
Trypoxylon petiolatum: Tsuneki, Ibid., 9: 160, 1979 (list of syn., India, S.E. Asia).
Trypoxylon petiolatum: Tsuneki, Ibid., 11: 39, 1979 (Sumatra, Java, Sumba, Flores).
Trypoxylon petiolatum: Tsuneki, Ibid., 12: 110, 1980 (Ambon, Binongko, Celebes, Borneo).

Specimens examined:

Luzon. 1 ♀, Antopolo, Riz., 27. VII. 1952, Townes family (AEI) (head lacking).
Basbas. 1 ♀, 13. IV. 1967, M. D. Delfinato, Malaise trap (BPBM).
Busuanga. 1 ♀, 4 km North of San Nicolas, 21. V. 1962, H. Holtmann, Malaise trap (BPBM).
Palawan. 2 ♀, Princessa, C. F. Baker (USNM); 1 ♀, near Puerto Princesa, IV. 1945, H. H.Blakemore (CAS); 1 ♀, Mt. Beaufort, Irawan River, 17. IV. 1968, M. D. Delfinato (BPBM); 1 ♂, Puerto Princesa, 12. XII. 1952, H. Townes (AEI); 1 ♂, Eran Pt., 8 km SW of Tarumpitao Pt., 31. XII. 1959 - 4. I. 1960, L. W. Quate (BPBM); 1 ♂, 3 km NE of Tinabog, 8. V. 1962, H. Holtmann, Malaise trap (BPBM); 1 ♂, Dalsahan Riv., near Iwahig, SW of Puerto Rrincessa, 18. IV. 1968 (BPBM) - from this specimen genitalia are taken out and examined.
Mindanao. 1 ♂, Butuan; 3 ♂, Surigao; 2 ♂, Kolambugan; 2 ♀, Iligan, C. F. Baker (USNM).
Basilan. 1 ♀ 2 ♂, C. F. Baker (USNM).
Tawitawi. 1 ♀ 1 ♂, Sulu, Tawitawi group, Bongao Is., 29. VIII. 1958, H. E. Milliron (BPBM).

On some characters.

(1) Colour of legs. ♀. All tibiae at base (in fore leg broadly extended in front) brown, fore and mid T1-2 always yellowish white (in mid leg apices brown), condiderably frequenly fore T3-4 also whitish, sometimes with a small brownish freck on each; tibial spurs always whitish. ♂. Always belonging to the black-legged form, tibial spurs only whitish, but fore tarsus usually strongly brownish.
(2) Colour of antenna. ♀. Usually from A5 apically brown-ferruginous beneath and sometimes A3 also brown at apex beneath. ♂. Wholly black.
(3) Colour of gaster. ♀ ♂. Usually from apex of G1 (narrow, but more or less extended anteriorly on sides) to apex of G3 ferruginous red, with a large blackish mark on G2 and 3 above. But in the specimens from Palawan (♀ ♂) red of G1 occupies greater part of apical swelling, G2 and 3 without dusky mark above and always G4 at base fairly broadly ferruginous red. The state resembles that of bicolor s. str., so I examined the male genitalia and could confirm that the specimen belonged doubtlessly to petiolatum.
(4) IODv, A3, A13, P and IODs. See Table 6. IODv, A3, A13 and P are the ratio to HW as 100. IODs is the ratio of IODc to IODv as 10. A13≒A9-12.
According to themeasurement of IODv in ♀ the Philippine population belongs to the typical form of the present species, but relative length to width of A3 is slightly larger than in typical specimens, rather intermediate between bicolor and petiolatum.
(5) SAT. Moderately high nasiform and acutely carinated in middle, medio-apical area around the apical part of the median carina flattened to form a round gallery, with its outer margin bluntly edged. This is the usual form of the area in the present species.
(6) PAF. In ♀ shallow, upcurved, wide V-shaped in cross section, while in ♂ considerably deep, flat-bottomed and U-shaped in cross section.

Table 6. Measurements on T. petiolatum from the Philippines

Loco	Sex	BL	IODv	IODs	A3	(L/W)	A13	(L/W)	P	(L/W)
Basilan	♀	13.0	27	7.5	25	(4.4)	--	(---)	164	(6.3)
Mindanao	♀	12.5	27	7.5	--	(---)	--	(---)	160	(6.2)
Mindanao	♀	12.5	27	7.5	26	(4.6)	--	(---)	176	(6.3)
Palawan	♀	13.5	27	7.2	26	(4.7)	--	(---)	165	(5.2)
Palawan	♀	13.5	26	7.5	26	(4.6)	--	(---)	160	(6.0)
Palawan	♀	13.0	27	7.5	25	(4.5)	--	(---)	164	(5.8)
Palawan	♀	12.5	28	7.3	26	(4.7)	--	(---)	164	(6.3)
Busuanga	♀	12.5	27	7.5	--	(---)	--	(---)	160	(5.7)
Basbas	♀	12.5	26	7.0	25	(4.5)	--	(---)	154	(5.5)
Luzon	♀	--	--	---	--	(---)	--	(---)	---	(5.6)
Basilan	♂	11.5	29	8.0	16	(2.3)	27	(3.4)	166	(6.9)
Basilan	♂	10.5	28	8.0	16	(2.5)	28	(3.3)	160	(6.6)
Mindanao	♂	11.8	29	8.0	17	(2.4)	29	(3.3)	146	(6.0)
Mindanao	♂	10.3	30	8.0	16	(2.2)	28	(3.4)	154	(6.8)
Mindanao	♂	10.5	30	8.0	17	(2.3)	28	(3.2)	166	(7.3)
Mindanao	♂	10.7	28	8.0	16	(2.3)	28	(3.4)	154	(6.7)
Mindanao	♂	11.5	30	7.7	16	(2.3)	28	(3.7)	156	(6.6)
Mindanao	♂	10.0	30	7.7	17	(2.3)	28	(3.5)	148	(6.1)
Mindanao	♂	10.0	30	8.0	16	(2.3)	29	(3.5)	148	(6.1)
Palawan	♂	11.4	29	8.0	16	(.3)	29	(3.4)	157	(6.5)

(7) ASR. States and numbers of carinae on dorsum of ASR are considerably variable in both sexes, especially in ♂, most usually tricarinate, but sometimes qudricarinate in ♀, with hind two weak. Fore two carinae are usually high and distinct, sometimes reflected, but sometimes similarly weak as in hind one or two. The states of posterior inclination is also variable, flat, gently swollen, etc.

(8) Lamina on side of pronotum. Distinctly triangularly produced, angle about 110°-120°, apex usually somewhat bluntly pointed, but sometimes rounded, but never toothed.

(9) Lateral carinae of propodeum. In some male specimens lateral carinae are faintly defined, just as in the type of T. cognatum Cameron, a synonym of petiolatum.

(10) Lateral furrows of area dorsalis. In ♀ usually feebly defined on posterior portion, sometimes very weak, almost completely absent, in ♂ more distinct, especially on posterior portion and frequently transversely striated. In one specimen from Mindanao (Surigao) fine furrow that encloses area dorsalis is fairly deep and distinct, but in other characters completely agrees with other specimens.

(11) Male genitalia. Shorter one of the apical two lobes of paramere is slender and comparatively long, typical in petiolatum specimens.

Remarks. An aberratio. In one of the Baker's specimens from Palawan the surface of the thorax-complex is markedly smooth and shining, especially on dorsal side where the hair is lost. Mesoscutum very finely and sparsely punctured, with surface polished and parapsidal sutures deeply impressed; punctures on scutellum and postscutellum larger, closer and more distinct than usual. Propodeum at base raised, raised area widened in a triangle towards middle whence it stretches out a longitudinal carina that runs in middle of median furrow till its apex; area dorsalis distinctly enclosed with fine furrow and at base obliquely striate, the striae on inner part finely extended on to disc, covering anterior part of the area, at posterior part the area transversely striate and the intervalic medial part feebly punctured, the state is quite strange in this species (lateral series of striae well-defined, but without lateral carinae). In other characters, however, it well concides with the male specimens of the same island and it seems certain that it does not belong to a different species.

40. TRYPOXYLON BICOLOR SMITH, 1856

Trypoxylon bicolor Smith, Cat. Hym. Brit. Mus., 4: 377, 1856 (♀, really ♂, Singapore and Java).

Trypoxylon bicolor: Tsuneki, SPJHA, 8: 1, 1978 (partim)
Trypoxylon bicolor: Tsuneki, Ibid., 8: 3, 1978 (lectotype and paralectotype only, not others).
Trypoxylon bicolor: Tsuneki, Ibid., 9: 158, 1979 (♀ ♂, Thailand, Malaya, Singapore).
Trypoxylon bicolor: Tsuneki, Ibid., 11: 38, 1979 (♀ ♂, Sumatra and Java).
Trypoxylon bicolor marginatum Tsuneki (nec Cameron, 1912), Steenstrupia, 4: 76, 1976 (♀, Philippines, Balabac, not Palawan).
Trypoxylon bicolor dorsale Tsuneki, Akitu, N.S., 9: 4, 1977 (= bicolor marginatum Tsuneki, renamed, nec T. dorsale Tsuneki, 1977).
Trypoxylon bicolor: Tsuneki, SPJHA, 12: 109, 1980 (♀ ♂, Borneo).

Specimens examined.

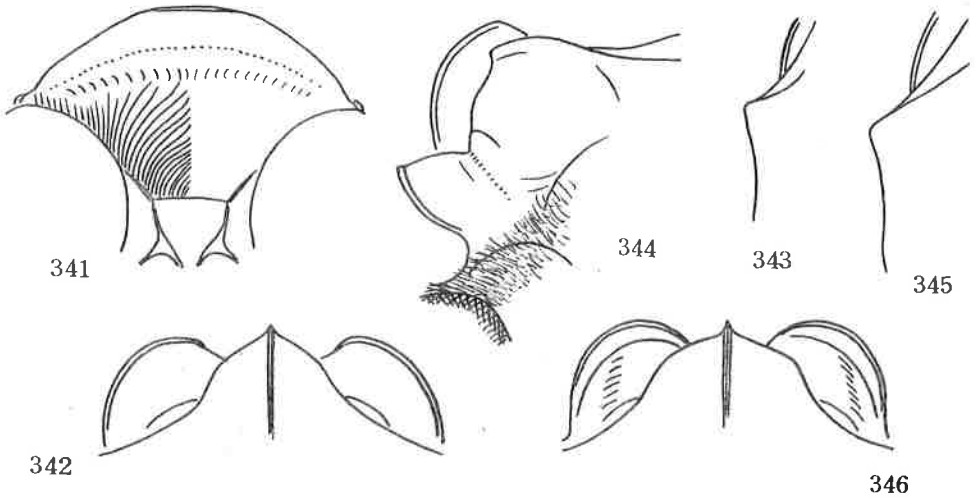
1 ♀, Balabac, 12. X. 1961, Noona Dan Exped. (ZMUC); 1 ♀, Palawan, Tarumpitao Pt. 23. V. 1958, in jungle, H. E. Milliron (BPBM).

Supplement to the description of the Balabac specimen.

(= holotype of so-called T. bicolor marginatum Tsuneki, nec Cameron, later renamed 'dorsale')

Colouration. Black; A1 and 2 at apices ferruginous, flagellum brown beneath, gaster from apical swelling of G1 to G4 ferruginous red; pale yellowish white on legs: fore knee narrowly, fore tibia except folded side, -tarsus except arolium, mid tibia at base and apex (remaining area pale brown in front and rest black), mid T1-5 except arolium, hind tibia at base broadly and all tibial spurs. Hind T2-5 brown, paler at apices and on claws.

Structure. SAT low broad nasiform, nearly tuberculate, strongly highly carinated in middle, medio-apical area without the apparent subflattened corridor or shelf around apical part of median carina (as with in petiolatum), this is due to that the anterior part of SAT is roundly inclined to all directions, seen from dorsal side lateral inclination of SAT is distinctly more acute in bicolor (Fig. 342) than in petiolatum (Fig. 346). PAF moderately deep, up-curved, ASR comparatively broadly ex-



Figs. 341-345. Trypoxylon bicolor Smith, ♀. 341-343, Balabac specimen; 344-345, Palawan specimen. Fig. 346. T. petiolatum Smith, ♀.

panded anteriorly, pale brown in colour and unicarinated at apical margin, dorsum smooth; clypeus: Fig. 341. HW,HL,IODv,A3,P=100,42,23,28,180. IODs=10:8. A3=AW×5.6. A3,4,5≒10,7,6. OOD,Od,POD≒4,7,4. P,Ma,Mi,2(Ma),3(Ma)=100,16,5,34(18),34(26). Pronotal lamina (Fig. 343) less acute than in typical specimen, not markedly toothed (this is considered a geographical variation), subalar area of mesopleuron normal. Propodeum without lateral carinae, area dorsalis with weak, but well-defined lateral furrows, anteriorly weaker and indistinct, posteriorly transversely closely striate. In fore wing RC=B, but somewhat close to C, CV1=CV2×5.7, TCV:CV2≒5:4, angle about

100°. Length 18 mm.

On the Palawan specimen.

Length 19 mm. Colour of antenna, gaster and fore and hind legs is as in the Balabac specimen. Mid tibia at base and apex, on front and rear sides both thoroughly ferruginous white. Mid tarsus except arolium also ferruginous, only on T5 slightly brownish. SAT-ASR (Fig. 344, dorso-lateral), clypeus, eye incision (narrow, subparallel-sided, dorsal margin slightly more raised than horizontal towards bottom), vertex (depressed, upper margins of hind ocelli slightly below top level of eyes) and occipital carina (complete and incised behind buccal cavity) also similar. HW:HL in frontal view of head 100:92. HW,HL,IODv,A3,P=100,44,23,28,184. OOD,Od,POD=2,5,3. IODs=10:9. A3=AWx5.5. A3,4,5=10,6.5,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,18,6,28(20),32(26). RC=B-C, CV1=CV2x6.5. TCV:CV2≒5:3, angle about 100°. The values are substantially identical (taking into consideration the inevitable error in measurements) with those of the Balabac specimen. Lamina on side of pronotum blunter (Fig. 345), area dorsalis completely without lateral furrows (different from Balabac specimen), median furrow at base very narrow and widely enlarged posteriorly, surface at base sparsely crenate and on antero-lateral areas broadly punctured, on postero-lateral areas transversely striate, medianly furrow on basal half crenate, rest of the area smooth and polished.

41. TRYPOXYLON SAMARENSE SP. NOV.

Diagnosis. ♀, 13-17 mm. Black, tibiae partly, fore tarsus and often mid T1 pale or dark brown, hair silvery; IODs=4:3 - 5:4, SAT-ASR: Figs. 347-350, clypeus: Fig. 351, pronotum normal, with lamina: Fig. 352, subalar area normal, propodeum practically without lateral carinae, area dorsalis with very weak lateral furrows, practically without, GSR roundly elevated, G1 flask-shaped, RC=B-C, mesoscutum simply punctured.

Supplement. Apical margin of clypeus castaneous, mandible light ferruginous, palpi ochre yellow, bases of tibiae pale or dark brown, in fore leg slightly extended in front, tibial spurs (longer one of hind leg slightly dark), fore tarsus (apically brownish above) and mid T1 wholly or at base ferruginous; hair at base of clypeus partly convergent towards medial line.

Head in frontal view with sides roundly gently convergent towards clypeus, W:L=100:88, vertex distinctly depressed and raised behind hind ocelli, frontal elvations considerably high, rounded, medial furrow broad and deep, V-shaped in cross section, SAT moderately high nasiform, acutely carinated in middle, apical area in front of the apex of median carina somewhat flattened, forming a narrow round shelf, with the margin bluntly edged (Fig. 347, vertical view), ASR raised, but much below top level of SAT, roundly expanded anteriorly, with the margin highly carinated (Figs. 347-350) PAF deep, flat-bottomed, U-shaped in cross section (Fig. 348, dorso-lateral view), SAT-ASR in dorsal view: Fig. 349, in lateral view: Fig. 350. Clypeus: Fig. 351, disc at base gently roundly raised, raised area comparatively small, with round outline, apical area broadly (including hairy area) reflected; occipital carina complete, but very weak behind buccal cavity.

HW,HL,IODv,A3,P=100,48,22,25,166. IODs=10:7.5. OOD,Od,POD≒3,8,4. A3=AWx4.5. A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,19,6,34(20),38(24). RC=B, but somewhat close to C, CV1=CV2x7. TCV:CV2≒7:4, angle at base 90°, at apices about 100°(TCV incurved).

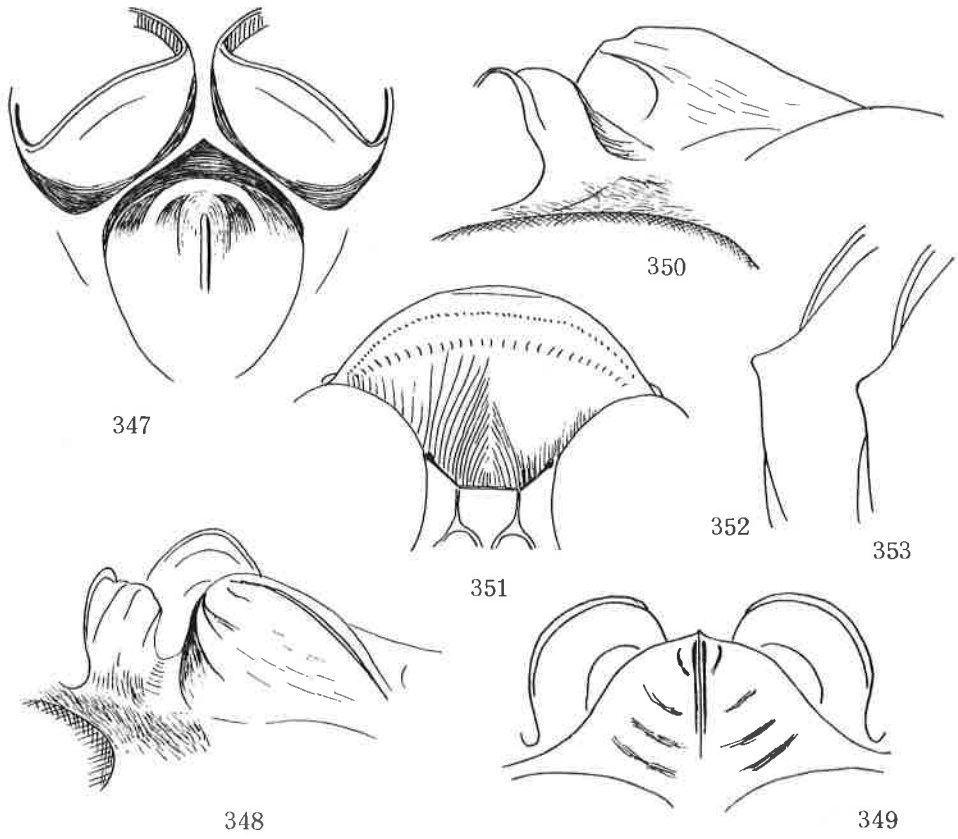
Collzr with anterior part narrow and gently widened towards sides, posterior part incompletely discoloured, sometimes posterior half, sometimes marginal area only narrowly discoloured, brownish, lamina on side: Fig. 352 or 353. On propodeum lateral series of strioles with the outer ends arranged in a longitudinal line and sometimes the area outside the line appears to be raised, but practically without lateral carinae; enclosing furrow of area dorsalis very feeble, sometimes almost completely unobservable, area apicalis only with lateral carinae, G1 distinctly flask-shaped, spiracles at about 1/5 from base.

Frons distinctly microcoriaceous and closely superimposed with fine punctures, punctures on top areas of the elevations sparse, mesoscutum with strong plumbeous shine, smooth and finely closely punctured, punctures on median area somewhat sparse, area dorsalis at base smooth, on median furrow feebly transversely striate, disc finely closely punctured, posterior inclination transversely arcuately striate on posterior portion and especially stronger in front of narrow smooth area before GSR.

As to ♂ see p. 116.

Holotype: ♀, Samar, C. F. Baker (USNM).

Paratypes: 1 ♀, Samar, C. F. Baker (USNM); 2 ♀, Mindonao, Kolambugan, C. F. Baker (USNM); 1 ♀, Luzon, Mt. Makiling, C. F. Baker USNM); 1 ♂, Basilan, C. F. Baker (USNM).



Figs. 347-353. Trypoxylon samarense sp. nov., ♀.

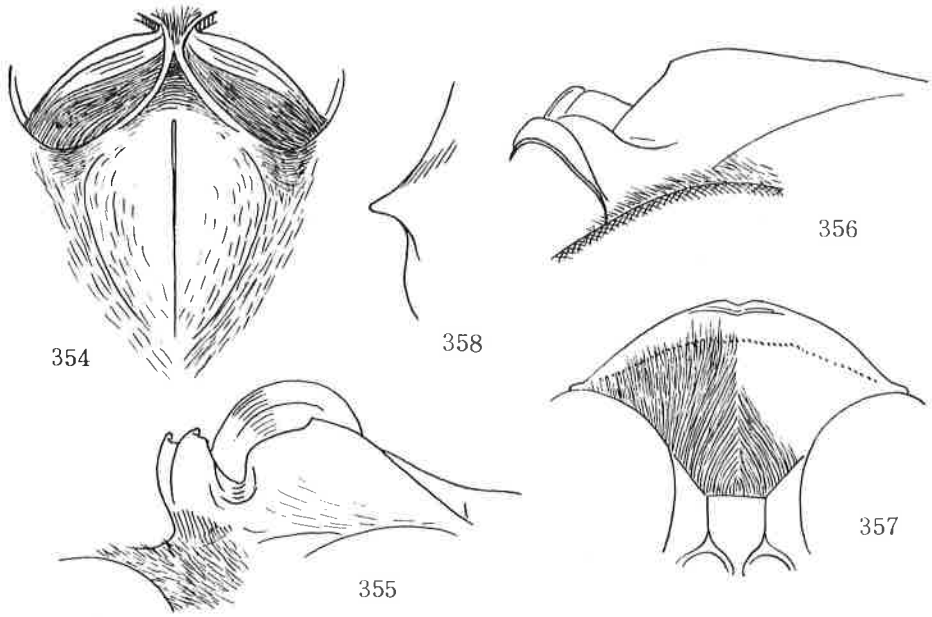
42. TRYPOXYLON SARUM SP. NOV.

Diagnosis. ♀, 11 mm. Antenna and gaster black, tibiae at base and spurs, fore tibia largely, fore T1-5, mid T1-2 ferruginous, hair silvery, IODs=10:7, SAT-PAF: Figs. 354-356, clypeus: Fig. 357, pronotal lamina: Fig. 358, mesoscutum without microsculpture, propodeum without lateral carinae, area dorsalis with feeble lateral furrows, finely punctured, G1 flask-shaped, RC=B-C.

Supplement. A1 and 2 ferruginous at spices, clypeus dark castaneous at apical margin, mandible ferruginous, brown at apex, palpi ochre yellow, posterior part of collar discoloured, tegula semitransparent ferruginous, basal plates of wing dark brown, fore tibia except folded side, fore tarsus except arolium, mid tibia at base and at apex, mid T1-2, sides of T3-5 and claws, hind tibia at base with spurs and hind claws ferruginous. Hair silvery, on clypeus at base sinuately convergent towards medial line.

Head in frontal view with sides rounded and somewhat convergent towards clypeus.

W:L=100:90, vertex weakly depressed, tops of hind ocelli nearly in a line with tops of eyes, eye incision comparatively narrow and narrowed towards bottom, dorsal margin horizontal, frontal elevations oviform in outline, considerably high, median furrow deep, V-shaped in cross section near base, SAT moderately high nasiform, ASR highly raised, with top only slightly below top level of SAT, SAT-ASR in vertical view: Fig. 354, in dorso-lateral view: Fig. 355, in lateral view: Fig. 356, clypeus: Fig. 357,



Figs. 354-358. Trypoxylon sarum sp. nov. ♀.

disc at base elevated and medianly gently tectate, apical margin not strongly reflected, occipital carina complete.

HW,HL,IODv,A3,P=100,52,23,24,170. IODs=10:7, OOD,Od,POD=1,3,1. A3=AW×5. A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,16,5,26(21),28(28). RC=B, but close to C, CV1=CV2×5.3. TCV:CV2÷5:4, angle at base about 100°, at apices 110°.

Anterior part of collar in frontal view with dorsal margin triangularly raised, slightly down-curved on both inclinations, top raised and minutely rounded, lamina on side distinctly toothed (Fig. 358), subalar area normal, area apicalis with lateral carinae only, not turned towards dorsal middle, GSR weakly roundly elevated at apical margin.

Frons distinctly microcoriaceous, superimposed punctures comparatively large but sparse, mesoscutum very finely and sparsely punctured, surface with fairly strong plumbeous shine, propodeum with weak lateral series of strioles (under natural condition dense covered with hair), area dorsalis covered with comparatively large shallow close, but not well-outlined punctures, partly mixed with feeble transverse striae, median furrow smooth and shining and lateral furrows transversely striate, sides covered sparse with fine hair-bearing punctures.

♂, unknown.

Holotype: ♀, Mindanao, Surigao, C. F. Baker (USNM).

Remarks. From the specimen left antenna from A8 apically, the right from A11 apically are lost.

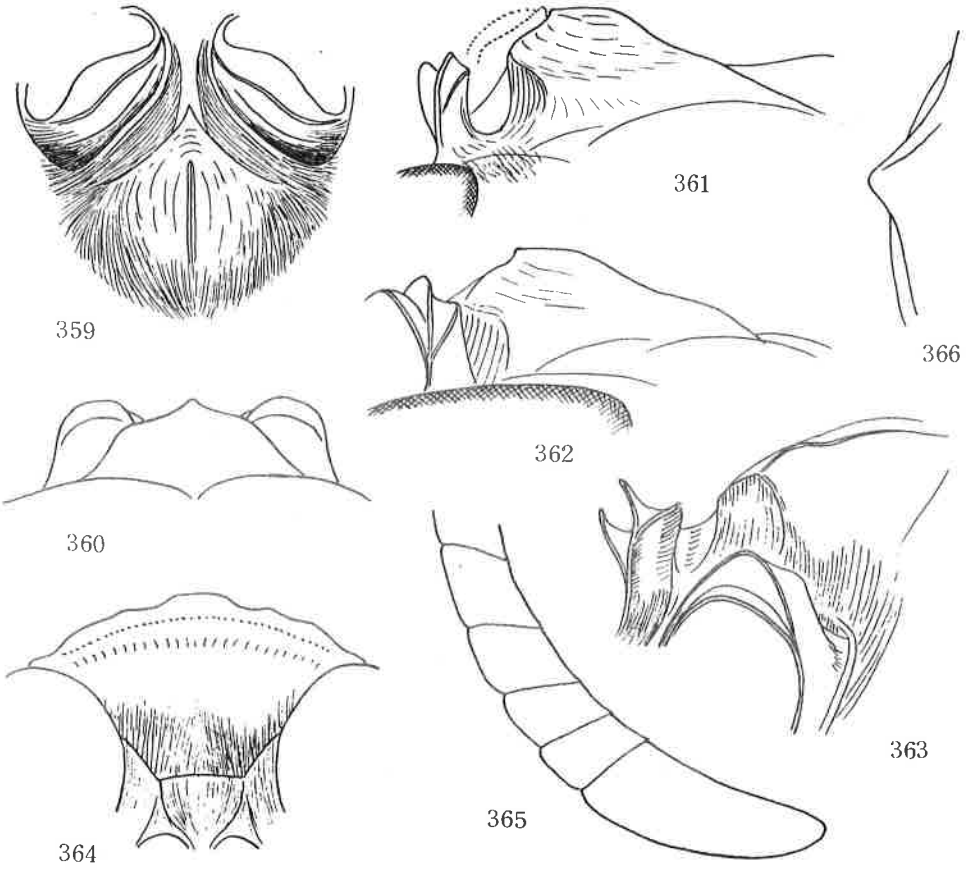
43. TRYPOXYLON COMPLUVIUM SP. NOV.

Diagnosis. ♀ 12-15 mm, ♂ 11-12 mm, black; gaster from apex of G1 to G4 ferrugi-

nous, fore and mid tibiae broadly, hind tibia partly and all tarsi nearly wholly yellowish white, spurs dark brown, subalar area of mesopleuron with well developed pent-roof structure, IODs=10:10 (♀ ♂), SAT tuberiform and carinated in middle, PAF deep, flat-bottomed, clypeus medianly at apex bluntly bidentate, Al3= A9-12, mesoscutum microcoriaceous and punctured, propodeum with lateral carinae, area dorsalis enclosed with furrow, G1 flask-shaped, RC=C.

♂. Antenna dark brown, Al and 2 somewhat pale, apical marginal area of clypeus ferruginous, extreme margin castaneous brown, mandible ferruginous, apically yellowish red, palpi yellow, posterior part of collar discoloured yellow, tubercle brown at marginal area, tegula and basal plates of wing also brown, fore and mid tibiae except folded side and hind tibia on basal 2/5 yellowish white, all T5 slightly pale brown, arolia black, fore tibial spur pale brown, mid and hind ones dark brown and conspicuous. Hair silvery, on clypeus parallel.

Head in frontal view with sides rounded, slightly convergent below, W:L=100:82, vertex depressed, tops of hind ocelli slightly below level of tops of eyes, eye incision narrow and deep, subparallel-sided, dorsal margin slightly raised outwards above horizontal, frons gently elevated, medial furrow at base broad and shallow and broadly shallowly enlarged apically, SAT moderately high tuberiform (or broad nasiform, with top area broadly rounded), distinctly carinated in middle, ASR highly raised, but slightly below top level of SAT, surface transversely tricarinate, median carina highest, PAF deep, flat-bottomed, U-shaped in cross section. The structure: Figs. 359 (vertical, from back side), 360 (dorsal), 361 (dorso-lateral), 362 (lateral), 363 (ventro-lateral). Clypeus: Fig. 364, apical part of antenna: Fig.365.

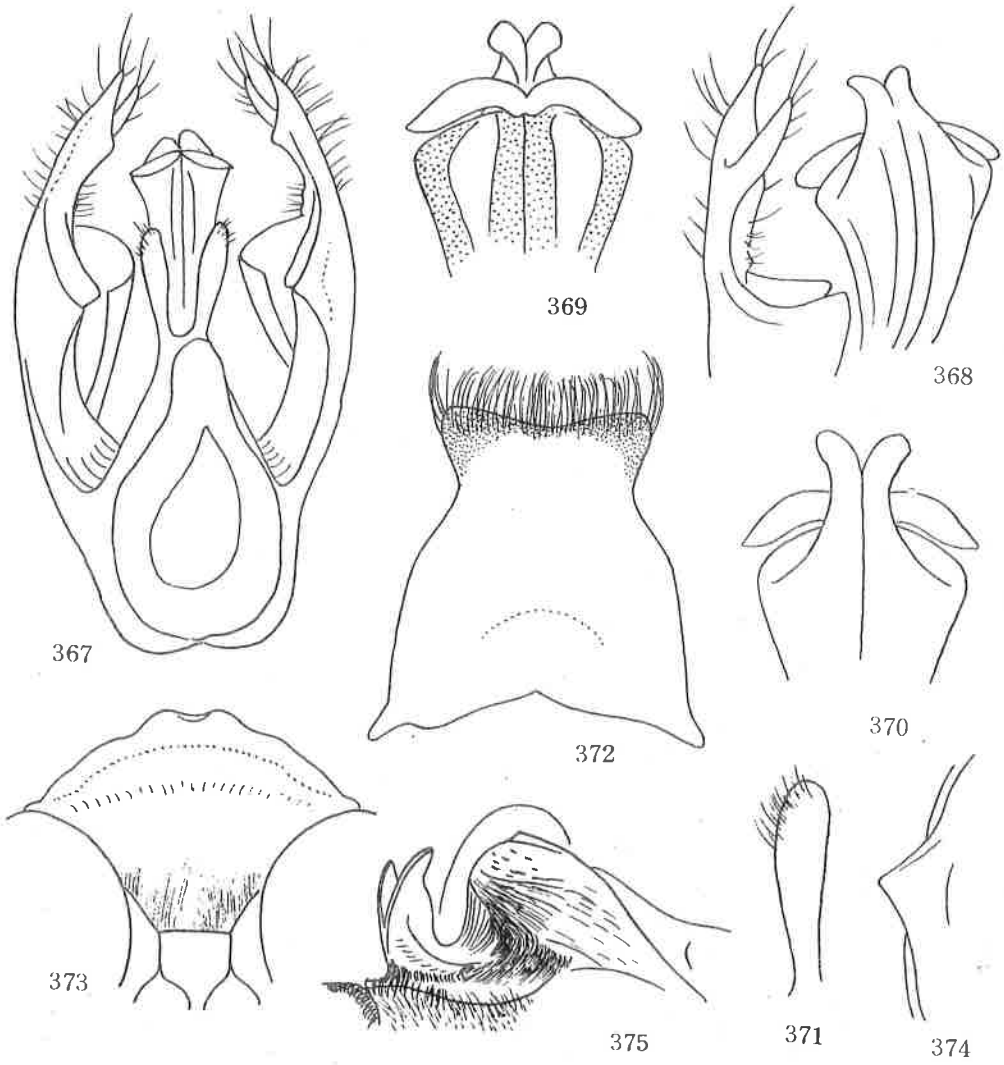


Figs. 359-366. Trypoxylon compluvium sp. nov., ♂

Occipital carina complete.

HW,HL,IODv,A3, Al3,P=100,47,22,19,26,140. IODs=10: 9. OOD,Od,POD=2,6.5,3. A3= AW×3.2. A3,4,5=10,6.5,6. Al3=BW×2.8 and ≒A9-12. P,Ma,Mi,2(Ma),3(Ma)=100,14,6,38 (19),36(28). RC=C, Rl moderately long, slightly shorter than CV2, CVl≒CV2x7. TCV: CV2=7:4. TCV very weakly sinuate, angle about 120°.

Collar of pronotum with anterior part very short, carina-like, only slightly widened towards sides, posterior part discoloured, dusky yellow, lamina on side triangularly produced (Fig. 366), subalar area of mesopleuron with well-developed pent-roof structure, vertical wall covered by the roof provided with two transverse - vertical - highly raised thin carinae, propodeum with distinct lateral carinae, the carina in lateral view curved, anteriorly not reaching spiracle and posteriorly not to apex, apical end of the carina not directing towards lateral carina of area apicalis, but curved downwards in front of it; lateral furrows of area dorsalis distinct, but not reaching base of the segment, median furrow fairly deep, slightly widened posteriorly, area apicalis widely open upwards, GSR roundly highly raised at apical margin, pale brown in colour.



Figs. 367-375. Trypoxylon compluvium sp. nov. 367-372 - ♂, 373-374 - ♀.

Fig. 375. Trypoxylon compluvium samarianum ssp. nov., ♀ ♂.

Genitalia (Fig. 367, ventral) of common form, paramere fairly deeply bifid at apex (Fig. 368 dorso-lateral), volsella spatulate, penis valve with well developed shoulder and sickle-shaped appendages (Figs. 368; 369, ventral and 370, dorsal), but the forms of ventral one of apical two lobes of paramere, of volsella (Fig. 371), of shoulder and sickle-appendages of penis valve characteristic. That the extended area of ventral lobes of paramere is bent in right angle to from a shelf as against the rolled lamella of inner margin of dorsal lobe (Fig. 367) is also worthy of notice. Sternite 8: Fig. 372 (from outer or ventral side).

Frons very finely microcoriaceous and rather indistinctly superimposed with comparatively large but shallow punctures, PIS=PD, but on top areas of the elevations slightly sparser; mesoscutum similarly microcoriaceous and punctured, surface nearly mat. Lateral series of strioles on propodeum distinct, area dorsalis at base strongly crenate, bottom line of medial furrow also crenate, rest of the surface of the furrow transversely finely closely striate, disc closely punctured with indistinctly outlined punctures, outside the area and posterior inclination transversely closely striate; sides except antero-ventral femoral sinus closely punctured and mixed with fine striae.

♀. Similar in colour and in general structure and sculpture to ♂. But head in frontal view longer, W:L=100:90, vertex more strongly depressed, IODv relatively narrower, eye incision marrower, parallel-sided, clypeus more strongly produced and more distinctly undulate at apical margin (Fig. 373), antenna ormal, lamina on side of pronotum more strongly produced (Fig. 374), RC=M-C.

HW,HL,IODv,A3,P=100,48,19,29,182. IODs=10:9.5. OOD,Od,POD≒1,7,3. A3=AW×6. A3, 4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,14,5,34(16),36(19). RC=M, but somewhat close to C, Rl short, but not very short, only slightly shorter than CV2 or A11 and reaching very close to wing apex, CVl=CV2×6, TCV:CV2≒8:5, angle about 130°.

Mesoscutum very finely microcoriaceous and more closely punctured than in ♂, area dorsalis similarly sculptured, but punctures on disc variable in clearness and rugosity, sometimes considerably broadly mixed with striae that are extended from the medial furrow.

Holotype: ♂, Luzon, Mt. Makiling, C. F. Baker (USNM).

Paratypes: 4 ♀ 1 ♂, same as holotype (USNM); 1 ♀, Mt. Makiling, 1000 m, 30. IV. 1968, D. E. Hardy (BPBM); 2 ♀, Los Banos, 30. I, 8. XI. 1953, Townes family (AEI).

Trypoxylon compluvium mindoronis ssp. nov.

A female specimen from Is. Mindoro differs markedly from the typical one in colour: Antenna black, Al and 2 dark brown, apical margin of clypeus glittering black, only slightly brownish at lateral areas, palpi brownish, pronotal tubercle black, basal plates of wing dark brown, gaster black, from apical area of G1 to G4 brown beneath only, fore tibia except folded side brown, mid tibia at base ferruginous, a patch at base of hind tibia brown, fore tarsus brown above, only T1 somewhat paler except apex, mid tarsus black except whitish basal 3/5 of T1, and a spot at base of hind T1 brown. 16 mm. Measurements: HW,HL,IODv,A3,P=100,49,22,29,172. IODs=10:9, OOD,Od,POD≒1,6,3. A3=AW×5.5. A3,4,5=10,5.7,5.2. P,Ma,Mi,2(Ma),3(Ma)=100,16,7,38(22) 38(28). RC=M. Rl moderately long, ≒CV2, but slightly shorter than A11 (5:6), CVl= CV2 7.5. TCV:CV2=2:1. TCV nearly straight, Rl completely reaching wing apex, angle about 110°.

♂, unknown.

Holotype: ♀, East Mindoro, Ilong, Mt. Haloon, 4500 ft, 11. V. 1954, M. and D. Townes (AEI).

Trypoxylon compluvium panayanum ssp. nov.

A female specimen from Is. Panay differs from others in that the gaster is completely black. Measurements: HW,HL,IODv,A3,P=100,48,19,29,194. IODs=10:9. OOD,Od, POD≒1,7,3. A3=AW×4.7. A3,4,5=10,6,5.5. P,Ma,Mi,2(Ma),3(Ma)=100,14,5,32(18),34(22). RC=C, Rl moderately long, =CV2, shorter than A11 (5:7), reaching very close to wing apex. CVl=CV2×7.2. TCV:CV2≒9:5. TCV weakly sinuate, angle about 120°. 15 mm.

♂, unknown.

Holotype: ♀, Panay, C. F. Baker (USNM).

Remarks. The gaster is mounted on a slit of card paper and attached to the pin. In this respect there remains some doubt as to whether it is correctly combined with the body or not.

Trypoxylon compluvium samarianum ssp. nov.

Differs from the typical form in that the gaster is completely black and hind T1 is largely black. Further, in all the specimens examined (♀ ♂) ASR only bicarinate on top, hind carina markedly reflected and in dorso-lateral view appears markedly thin (Fig. 375). ♂ 11, ♀ 11-12 mm. Measurements (holotype ♂): HW,HL,IODv,A3,Al3, P=100,49,24,18,28,156. IODs=10:8. OOD,Od,POD=2,5,4. A3=AW×3. A3,4,5÷10,6,6. Al3= BW×2.8 and ÷A9-12. P,Ma,Mi,2(Ma),3(Ma)=100,14,6,34(17),35(24). RC=C, R1 moderately long and =CV2, reaching very close to wing apex, CV1=CV2×6.2. TCV:CV2=8:5. TCV distinctly sinuate, angle about 120° as a whole. Genitalia and sternite 8 completely agree with those of typical form.

Holotype: ♂, Samar, C. F. Baker (USNM).
Paratypes: 1 ♀ 4 ♂, Samar, C. F. Baker (USNM).

Remarks. In the single female head is crushed at the eyes and can not be measured of its width (HW). But IODs=10:9, OOD,Od,POD÷1,6,4. A3,4,5=10,7,6.5. P,Ma,Mi, 2(Ma),3(Ma)=100,14,5,36(15),36(16).

44. TRYPOXYLON INSULARE TSUNEKI, 1976

Trypoxylon insulare Tsuneki, Steenstrupia (Copenhagen), 4: 88, 1976 (♀, Tawi Tawi, with a figure of head seen in front).

In the original description which is considerably detailed this species was compared with T. varipes Pérez. Certainly it is somewhat similar to this species in the coloration of the legs and in the ratio of IODs, but is markedly different from this in the structure of SAT-ASR.

Supplement to the original description by revision of the paratype female.

SAT-ASR: Fig. 376 (dorso-lateral), 377 (ditto, to see through PAF). SAT moderately high and comparatively long nasiform, distinctly carinated in middle, verge to PAF not acutely edged. PAF fairly deep, flat-bottomed, U-shaped in cross section, but outer end considerably higher than level of scapal hollow; ASR highly raised, tricarinate on top. Clypeus: Fig. 378, somewhat resembling in outline that of T. striolatum, disc at base roundly elevated, with hair strongly sinuately curved towards medial line, apical area broadly reflected (shown with thick dotted line in the figure) and pale castaneous brown in colour. Measurements: HW,HL,IODv,A3,P=100,52,24,25,146. IODs=10:6. OOD,Od,POD÷2,5,3. A3=AW×5. A3,4,5=10,6.5,6. P,Ma,Mi,2(Ma),3(Ma)=100, 22,6,30(27),36(34). RC=C, R1 short, CV1=CV2×6. TCV:CV2÷5:6, angle about 100°. Vertex considerably depressed, eye incision narrow and deep (cf. figure in the original description), subalar area normal. Propodeum with fine lateral carinae, in lateral view up-curved, weaker and indistinct towards both ends, area dorsalis with very broad and shallow lateral furrows, surface at base obliquely, on the rest transversely finely closely striate, GSR roundly elevated, amber-yellow in colour.

Viewed from the present knowledge of the genus this species (♀) is closest in appearance to T. striolatum m., differs from this, however, in that the gaster is always completely black, IODs is smaller, clypeus with apical marginal area brown in colour, medianly depressed and not incrassate, PAF deep and flat-bottomed and, moreover, hind tarsus broadly whitish, although considerably variable in colour as given later.

Specimens examined:

Tawi Tawi. 1 ♀ (paratype), Tarawakan, 10. XI. 1961, Noona Dan Exp. (ZMUC).
Mindanao. 1 ♀ Surigao, 1 ♀ Butuan, 1 ♂, Zamboanga, C. F. Baker (USNM); 1 ♀, Davao, Genitalan, 8 km NW of Mt. Apo, 690 m, in jungle, 17. VIII. 1958, H. E. Milliron (BPBM).
Negros. 1 ♂, Cuernos Mts., C. F. Baker (USNM); 1 ♀, Mt. Canlaon, 3600 ft, 7. V. 1953, H., M. and D. Townes (AEI).
Samar. 7 ♀, C. F. Baker (USNM).
Mindoro. 1 ♀, Alcate Vict., 6. IV. 1954, H., M. and D. Townes (AEI); 1 ♀, Illeng Mt. Halcon, 4500 ft, 11. V. 1954, M. & D. Townes (AEI).
Panay. 1 ♀, NW region, C. F. Baker (USNM).

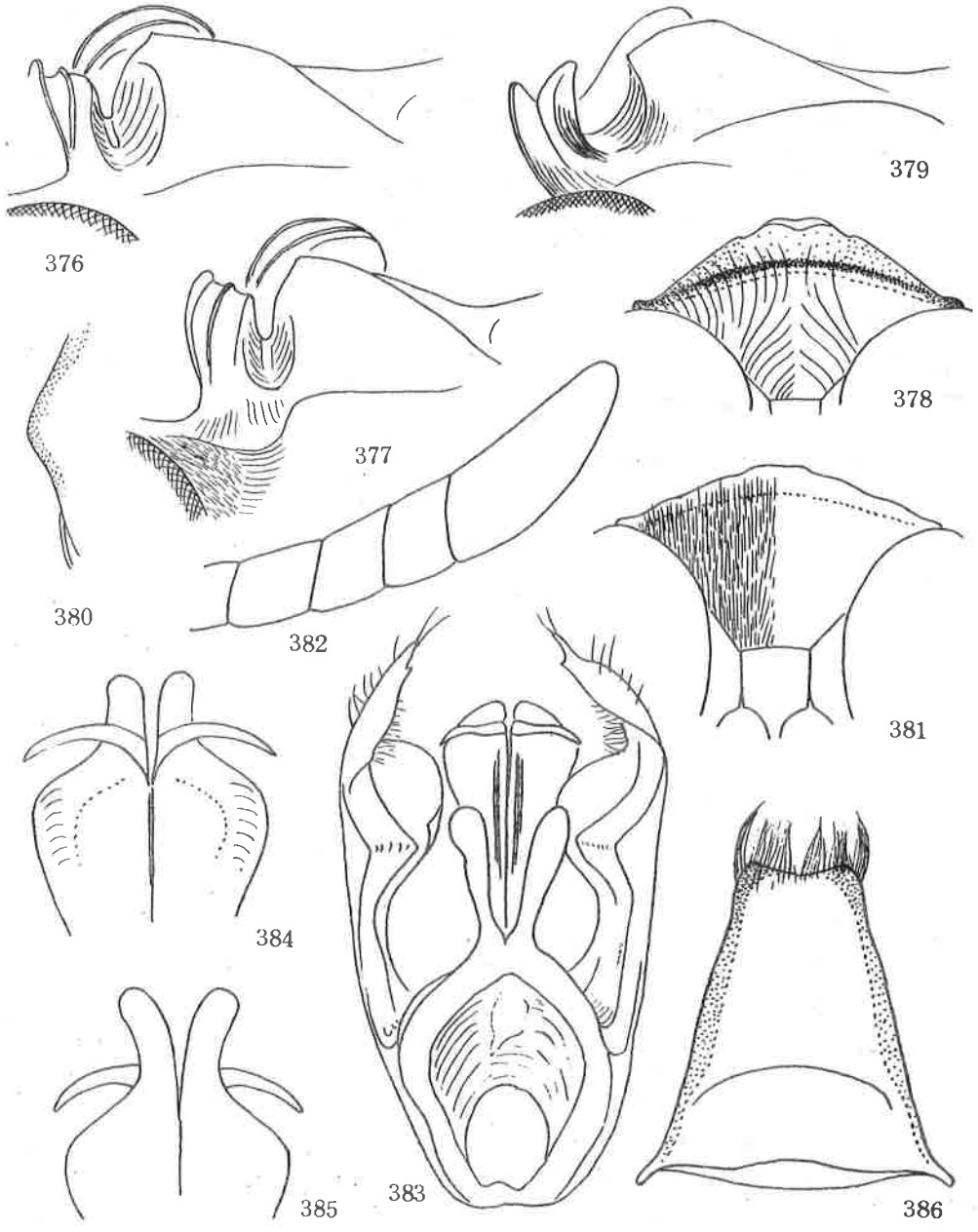
Variation of the colour of tibiae and tarsi

In the following unless otherwise given, fore tibia: inner (folded) side and an

obscure streak on outer side brown, rest pale yellowish white or pale ferruginous; mid tibia: inner side and a short median streak on outer side dark brown; hind tibia: at base only whitish, more or less varied in length. Fore tarsus always white (somewhat pale yellowish), at most T5 very feebly brownish, arolium always black.

Tawi Tawi specimens.

Mid tibia except base and apex brown or dark brown, rest whitish. Mid tarsus from apex of T2 to T5 black. Hind tarsus black, only articulations brown.



Figs. 376-386. Trypyrylon insulare Tsuneki
376-378. Paratype ♀, 379-380 other ♀. 381-386, ♂ from Mindanao.

Mindanao specimens (♀ ♂).

Mid tibia as in the Tawi Tawi specimens. Mid T5 brown or dark brown. Hind T1 except extreme apex and T5 black or dark brown, T2-4 somewhat brownish apically, rest whitish.

Negros specimens (♀ ♂).

Mid tibia medianly broadly dusky, sometimes an obscure line on outer side also brownish, rest ferruginous, while mid and hind tarsi complete white except arolia.

Panay specimen.

Mid tibia except brown base and apex black, tarsus wholly whitish. Hind T1 at apex and T2-5 white, rest black.

Samar specimens.

Mid tibia medianly fairly broadly dusky, often on rear side ferruginous. Mid T5 brown or dark brown, hind T1 and 5 largely black, often (3/7) T2 except bade brown, rest whitish.

Mindoro specimens.

Fore tibia at base and apex narrowly and lengthwise narrowly on frontal and rear sides whitish, rest dusky. Mid tibia except narrow base and apex black in ♀, medianly broadly dusky on outer side in ♂, mid T5 dark brown or black, hind T1 except extreme apex and T5 largely black, T2 and 3 except base brown or dark brown, rest whitish.

On some other characters.

(1) Striae on area dorsalis. Usually considerably mixed with punctures on the areas close to the median furrow, but sometimes almost without puncture and feebly striate, in some specimens, however, anterior part without striae and simply sparsely covered with weak punctures. In the Negros ♂ the striae are absent except on the median furrow and posterior margin and weakly punctured all over. This is individual variation and not the character of the Island population.

(2) ASR. In the types from Tawi Tawi it is tricarinate on top (Figs. 376,377), but hind carina is very weak. In the specimens from other islands ASR is only rarely similar in structure. In most of the specimens it is more highly bicarinate, hind carina is much higher and sometimes strongly reflected (Fig. 379), giving rise to the oval PAF.

(3) Clypeus. Apical margin somewhat similar in outline to that of striolatum, but in insula e medio-apical produced area never incrassate, not black (usually brown) in colour and marginal incision is continued backwards as a triangular depression. Medial protuberance is strictly weaker and broader even in fresh specimens than in striolatum.

(4) Lamina on side of pronotum. Always obtused triangle, with apex rounded.

(5) GSR. Always roundly, highly elevated.

(6) Colour of gaster. Usually the gaster is completely black. In the specimen captured in Mt. Halcon, 4500 ft. in east Mindoro G2-3 are distinctly pale brownish beneath, showing a tendency towards the Luzon population (see ssp. rufomaculatum ssp. nov.).

(7) Measurements in ♀ (Table 7).

Loco	HL	IODv	A3 (W/L)	P	IODs	Ma	Mi	2 (Ma)	3 (Ma)
Mindanao	52	24	24 (4.7)	132	5.0	24	8.0	34 (25)	38 (35)
Mindanao	50	24	26 (5.4)	152	5.0	20	7.0	26 (24)	32 (29)
Negros	51	23	27 (5.3)	166	5.0	19	7.0	26 (21)	32 (28)
Samar	53	23	26 (5.0)	144	5.0	22	7.5	30 (24)	36 (34)
Mindoro	52	24	26 (5.0)	140	5.5	22	7.5	29 (24)	36 (33)

(8) Wing venation. RC always B-type, CV1=CV2 6-7, exception 8 and 5.

According to Table 7, IODs is somewhat smaller in these Island populations than in the Tawi Tawi, all other values fall within the range of variation or measurement-error.

Description of the male.

Black; antenna dark brown, A1 and 2 somewhat pale and much paler at apices, mandible on basal half yellow and apically reddish brown, palpi yellow, posterior part of collar discoloured, yellowish, tegula and basal plates of wing brown. Legs as in the female of the respective island (Mindanao and Negros).

General characters as in ♀, IODc relatively wider, clypeus less produced anteriorly, with undulation at apical margin weaker (Fig. 381), antenna different as usual

(see measurements and Fig. 382), punctures on mesoscutum finer and sparser, area dorsalis in the Negros specimen very feebly and indistinctly striate on the disc, with punctures better observed, while in Mindanao specimen striae are more stronger (although weaker than in ♀) than punctures.

Measurements on Mindanao specimen (within parentheses on Negros one).

HW:HL in frontal view: 100:82 (100:80). HW,HL,IODv,A3,A13,P=100,52,25,14,24, 116 (100,56,26,16,22,118). IODs=10:8 (10:7). OOD,Od,POD=2,5,3.5 (2,5,3). A3=AWx 2.5 (AWx2.3). A3,4,5=10,7,6 (10,7,6.5). A13=BWx3 (BWx2.8). >A10-12, but <A9-12 (≒A10-12). P,Ma,Mi,2(Ma),3(Ma)=100,23,8,36(30),38(42) (100,24,8,36(32),39(40)).

Venation generally similar.

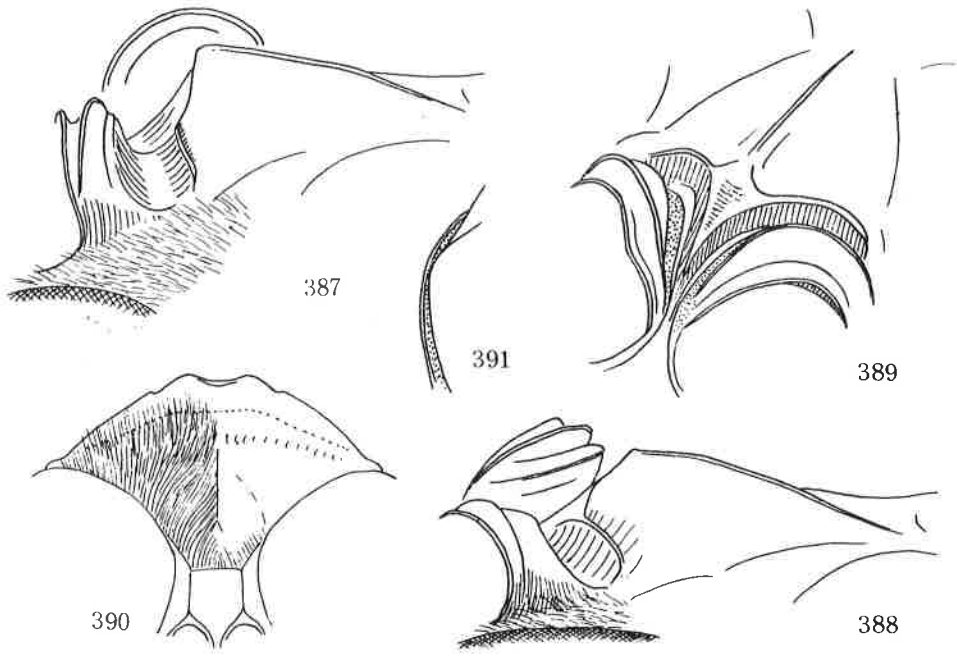
Genitalia seen from beneath: Fig. 383. Despite the close resemblance in appearance the present species markedly differs in the structure of penis valve from that of striolatum. It has the shoulder and sickle-appendages. Apical part of penis valve: Figs. 384 (ventral) and 385 (dorsal), sickle appendages narrow and normal in the form. Paramere similarly simple at apex, but here much broader. Sternite 8 (Fig. 386) is rather similar in form to that of the compared species.

Trypoxylon insulare rufomaculatum ssp. nov.

This subspecies of insulare was considered at first to be a distinct species and was described as such and later shifted to the present status. In order to contribute for making clear the relationships among the island-populations of the present species full description of the Luzon subspecies is given below:

Main characters. ♀, about 12 mm. G2-4 red, antenna slightly brownish beneath, fore tibia largely, mid and hind tibiae at base, fore and mid T1-5 and hind T2-5 yellowish white, hair silvery, IODs=2:1, mesoscutum microcoriaceous, propodeum with lateral carinae, area dorsalis enclosed with furrow, G1 flask-shaped, RC=C-M.

Black, A1 and 2 at apices ferruginous, A1 pale brown beneath, clypeus at apical area castaneous, mandible ferruginous, apically brownish red, palpi pale yellow, posterior part of collar discoloured, yellowish, tegula pale brown, basal plates of wing castaneous, gaster from extreme apex of G1 to G4 ferruginous red (G4 apically appears blackish, due to insertion of black G5). Fore tibia with folded side and an obscure patch before apex brown, base and apex of mid tibia, tibial spurs and base of hind



Figs. 387-391. Trypoxylon insulare rufomaculatum ssp. nov., ♀

tibia pale yellowish white, apex of hind T1 also white. Hair silvery, on clypeus at base strongly sinuately curved towards the medial line.

Head in frontal view with sides rounded, somewhat convergent towards clypeus, vertex depressed, tops of hind ocelli below level of tops of eyes, W:L=100:92, eye incision narrow, gently narrowed towards bottom, dorsal margin slightly raised outwards above horizontal, frontal elevations comparatively small in area and rather acutely raised, with top area narrower than usual, median furrow broad and deep, wide V-shaped in cross section, SAT moderately high nasiform, distinctly carinated in middle, ASR highly raised, but below level of top of SAT, acutely bicarinate, PAF fairly deep, flat-bottomed, but the bottom line rather inclined from IAA latero-posteriorly, U-shaped in cross section, SAT-ASR in oblique dorso-lateral view: Fig. 387, in lateral view (somewhat obliquely from above): Fig. 388, ventro-lateral view: Fig. 389, SAT at verge to PAF distinctly edged. Clypeus: Fig. 390, at base raised and medianly tectate till base of apical reflection, the reflection broad and fairly strong, medio-apical area somewhat incrassate and roundly inclined apically.

HW,HL,IODv,A3,P=100,54,24,26,140. IODs=10:5.5. OOD,Od,POD≒2,5,3. A3=AW×4.5. A3,4,5=10,6.5,5.5. P,Ma,Mi,2(Ma),3(Ma)=100,22,7,38(25),44(34). RC=C-M, R1 short, not reaching close to wing apex, CV1=CV2×5.5. TCV:CV2≒5:3. TCV gently sinuate, angle about 95°.

Occipital carina complete, anterior part of collar very short, like transverse carina, almost not widened laterally, lamina obtuse triangle, apex broadly rounded and only slightly produced (Fig. 391), subalar area normal. Lateral carinae of propodeum distinct, but not reaching apex, lateral furrows of area dorsalis broad and shallow, very weak and indistinct anteriorly, area apicalis complete, but carina weaker dorsally.

Frons very finely, delicately microcoriaceous, punctures shallow and sparse, under low magnification not well defined, appearing simply opaque. Mesoscutum with punctures comparatively large and distinct, fairly close, PIS=PD×1-2, microsculpture on PIS much more distinct than on frons. Area dorsalis at base obliquely, on the rest transversely, finely closely striate, striae stronger and coarser on median furrow and obsolete on the disc near the furrow and mixed with punctures, but the striae extend across lateral furrows on to outside the area, and together with those on posterior inclination completely covering the dorsal surface of propodeum, series of striae along lateral carinae are only a part of general striae, but there the striae stronger and coarser. Sides obliquely and closely striate including femoral si us, but the surface except the sinus fairly closely covered with strong distinct punctures also.

♂, unknown.

Holotype: ♀, Luzon, Camarines Sur, Mt. Isalog, 750-800 m, 10-12. V. 1963, H. E. Torrevillas (BPBM).

Paratypes: 1 ♀, Mt. Isalog, 500-600 m, 20 km east of Naga, 6. IV. 1963, H. E. Torrevillas (BPBM); 2 ♀, Luzon, Los Banos, III-IV. 1925, Pemberton (BPBM); 1 ♀, Los Banos, 16. I, 7. III, 22. XI. 1953, Townes family (AEI); 2 ♀, Mt. Makiling, C. F. Baker (USNM); 1 ♀, Baguio, Benquet, C. F. Baker (USNM); 1 ♀, Luzon, Prov. Laguna, Alaminos, Hidden Valley Spring, 3-4. IV. 1978, T. Murota (Coll. Murota); 1 ♀, Luzon, Prov. La Union, San Fernando, sand beach, 27. III. 1978, T. Murota (Coll. Murota).

Other specimen. 1 ♀, Luzon, Mt. Makiling, C. F. Baker (USNM) (gaster lacking)

Remarks. The striation of the propodeum considerably resembles that of striolatum, but the present species is easily separable from this in the form of the clypeus and in the colour of the hind tarsus. In the holotype SAT at the verge to PAF horizontally narrowly flattened and then edged and acutely inclined to PAF (Figs. 387-389), in other specimens this is not always the case.

This subspecies is confined in distribution to the island Luzon.

46. TRYPOXYLON BANAHAO SP. NOV.

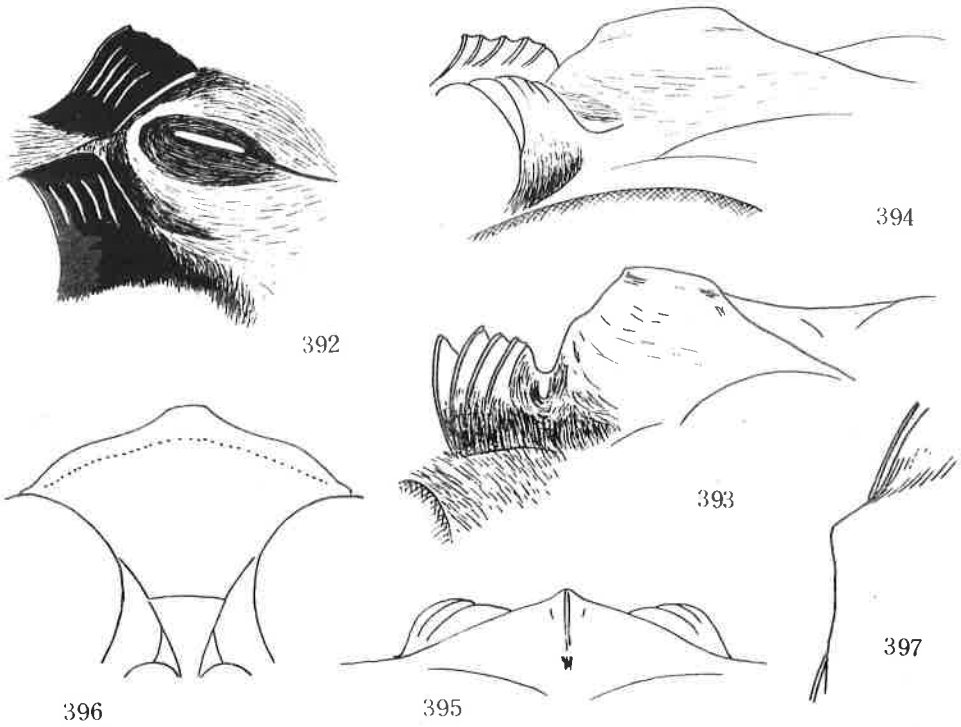
Diagnosis. ♀, about 14 mm. G1 flask-shaped, long, mesoscutum with microsculpture, but fairly shining, gaster medianly broadly red, propodeum with weak lateral carinae, area dorsalis enclosed with broad shallow furrow, surface weakly longitudinally rugoso-punctate, fore tibia largely, mid and hind tibiae at base, fore and mid tarsi and hind T2-5 whitish. Hair silvery, RC=M. ♂, A3 shorter, A13 > A11-12, but < A10-12, clypeus less produced anteriorly.

Supplement. Antenna dark brown, paler at apices of A1 and 2, apical marginal

area of clypeus ferruginous and castaneous at extreme margin, mandible yellow, apical half glossy brown-red, palpi yellow, discoloured posterior part of pronotal collar yellowish, tegula (semitransparent) and basal plates of wing dark brown; gaster from apex of G1 (on sides somewhat extended anteriorly) to G4 reddish yellow, without black mark above (constant ?). Legs dark brown, tibiae and tarsi pale yellowish white, but fore tibia on folded side, mid and hind tibiae except basal ring, all arolia and hind T1 except apex dusky; fore spur apically brownish, mid and hind spurs dark brown. Hair silvery, on clypeus at base nearly parallel.

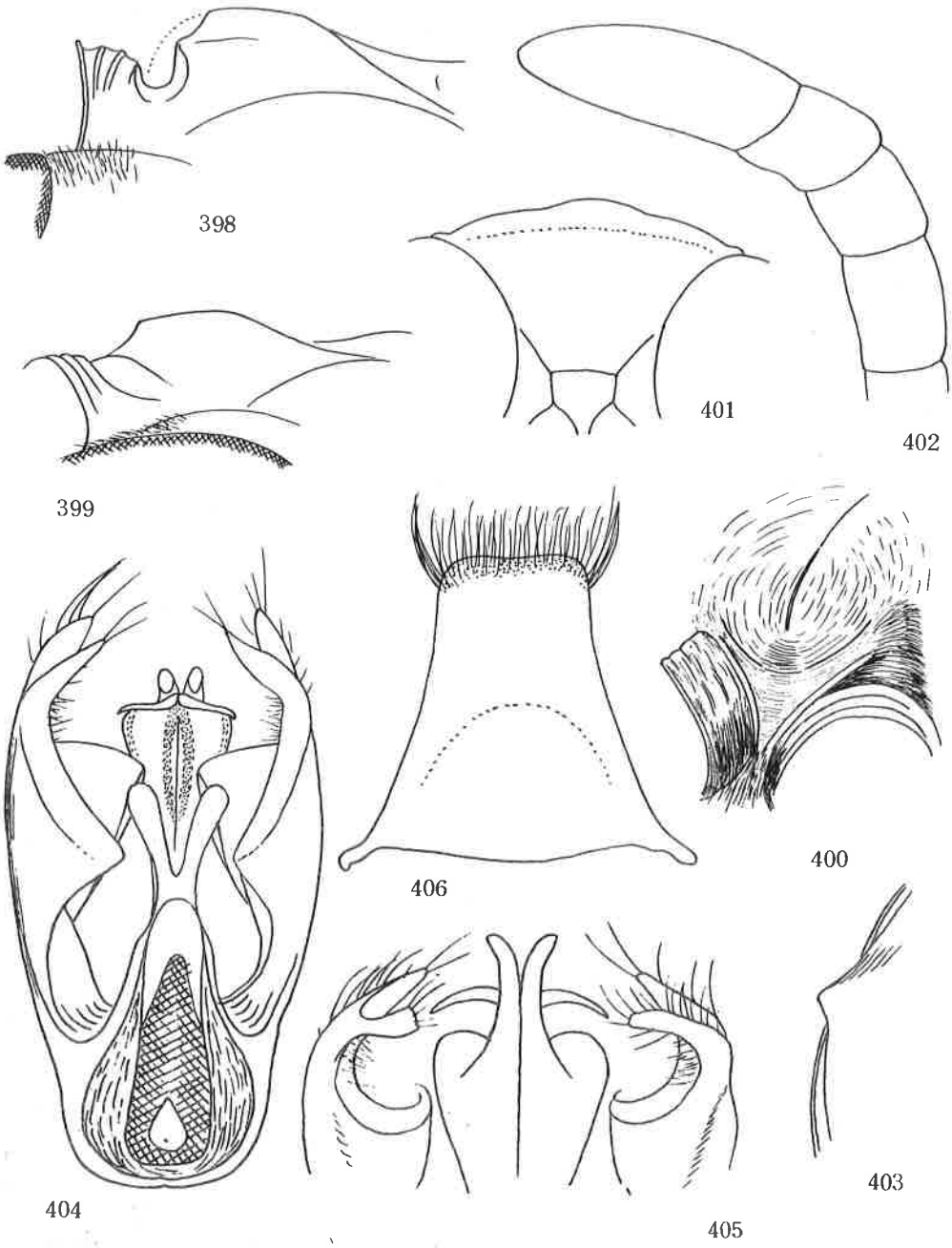
Head in frontal view with sides rounded, almost not convergent below, W:L=100:88, vertex depressed, tops of hind ocelli in a line with tops of eyes, eye incision narrow and deep, subparallel-sided, with dorsal margin slightly raised outwards above horizontal, frontal elevations gently roundly raised, oval in outline, medial furrow broad, considerably deep and broadly enlarged on anterior part, the surface gently, flatly inclined towards medial line, SAT low tuberiform, apical margin subtriangularly rounded in vertical view, marginal area narrowly flattened, median carina distinct and the carinate area raised into a small nasiform mound (Fig. 392, latero-vertical), ASR raised and expanded anteriorly, with dorsum transversely quadricarinated (Fig. 393, dorso-lateral), PAF moderately deep, flat-bottomed, small-U-shaped in cross section (ditto), the structure in lateral view: Fig. 394, in dorsal view: Fig. 395. Clypeus: Fig. 396, disc at base very gently elevated, elevation weakly continued anteriorly, apical marginal area reflected and the margin recurved in middle as in errans, but not incrassate nor bevelled, occipital carina weak and weaker beneath head and lacking behind buccal cavity.

HW,HL,IODv,A3,P=100,52,21,23,190. IODs=10:9. OOD,Od,POD=1,12,5. A3=AW 4. A3, 4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,12,5,32(16),36(20). RC=M, R1 rather short, about half the length of IODv, but amply reaching wing apex. CV1=CV2 5. TCV:CV2=3:2, angle about 110 .



Figs. 392-397. Trypoxylon bonahao sp. nov., ♀.

Dorsum of collar roundly raised in frontal view, slightly swollen and angulate in middle, lamina on side: Fig. 397 (left), subalar area normal; lateral carinae of



Figs. 398-406. Trypoxylon banahao **sp. nov., ♂**

propodeum weak, in some light difficult to observe, especially weaker at both ends, lateral furrows of area dorsalis also weak, but well defined, lateral carinae of area apicalis curving up, but broadly interrupted at dorsal middle, GSR roundly but not markedly elevated.

On frons microreticulation rather fine and weak, punctures distinct and close, partly obliquely contiguous to each other, mesoscutum with microsculpture larger than on frons, more distinct, punctures somewhat sparse, PIS=PD 1-2. Propodeum with lateral series of striae, but the striae feeble, area dorsalis at medio-basal area obli-

quely striate, median furrow transversely punctate-striate, disc longitudinally shallowly rugoso-punctate, rest of the dorsal side covered sparsely with fine hair-bearing points, sides except femoral sinus shallowly indistinctly rugoso-punctate.

♂. 11 mm, similar in colour and punctuation, and in general structure except sexual ones to ♀. Slight differences: Whitish basal rings of mid and hind tibiae are very obscure, SAT without medial small nasiform mound, simpley rounded, but at verge to PAF more acutely edged, PAF rather inclined flatly towards IAA, ASR somewhat shorter, apparently tricarinate (posteriormost carina weak), cf. Figs. 398 (dorso-lateral), 399 (lateral) and 400 (ventro-lateral). Pronotal lamina: Fig. 403, clypeus less produced anteriorly (Fig. 401), A13: Fig. 402. Genitalia seen from beneath: Fig. 404, apical part seen vertically from dorsal side: Fig. 405. Paramere bifurcate at apex, at its axis provided with a long assemblage of blackish pigment, volsella spatulate, apical processes of penis valve remarkably slender and long, sickle-appendages narrow, shoulder not obliquely inclined, but roundly elevated (Fig. 405). Sternite 8: Fig. 406.

Head in frontal view with sides rounded, not convergent below, vertex weakly depressed, tops of hind ocelli slightly above level of tops of eyes, eye incision moderately wide and distinctly narrowed towards bottom, dorsal margin slightly inclined outwards below horizontal, W:L=100:84.

HW,HL,IODv,A3,A13,P=100,53,23,18,20,146. IODs=10:8. OOD,Od,POD=1,7,4. A3=AW×3. A3,4,5≒10,7,6. A13=BW×2.5 and >A11+12, but < A10-12 united. RC=M, R1 short, but reaching near apex, CV1≒CV2×5, TCV:CV2≒3:2, angle about 100°.

Holotype: ♀, Luzon, Mt. Banahao, C. F. Baker (USNM).
Paratype: 1 ♂, Sibuyan, C. F. Baker (USNM).

Remarks. In the holotype specimen the gaster is from G2 apically dropped off and is mounted on a slit of card paper and attached to the pin. In the paratype male the gaster is detached to take out the genitalia and sternite 8, they are all mounted on a triangular card paper and attached to the pin.

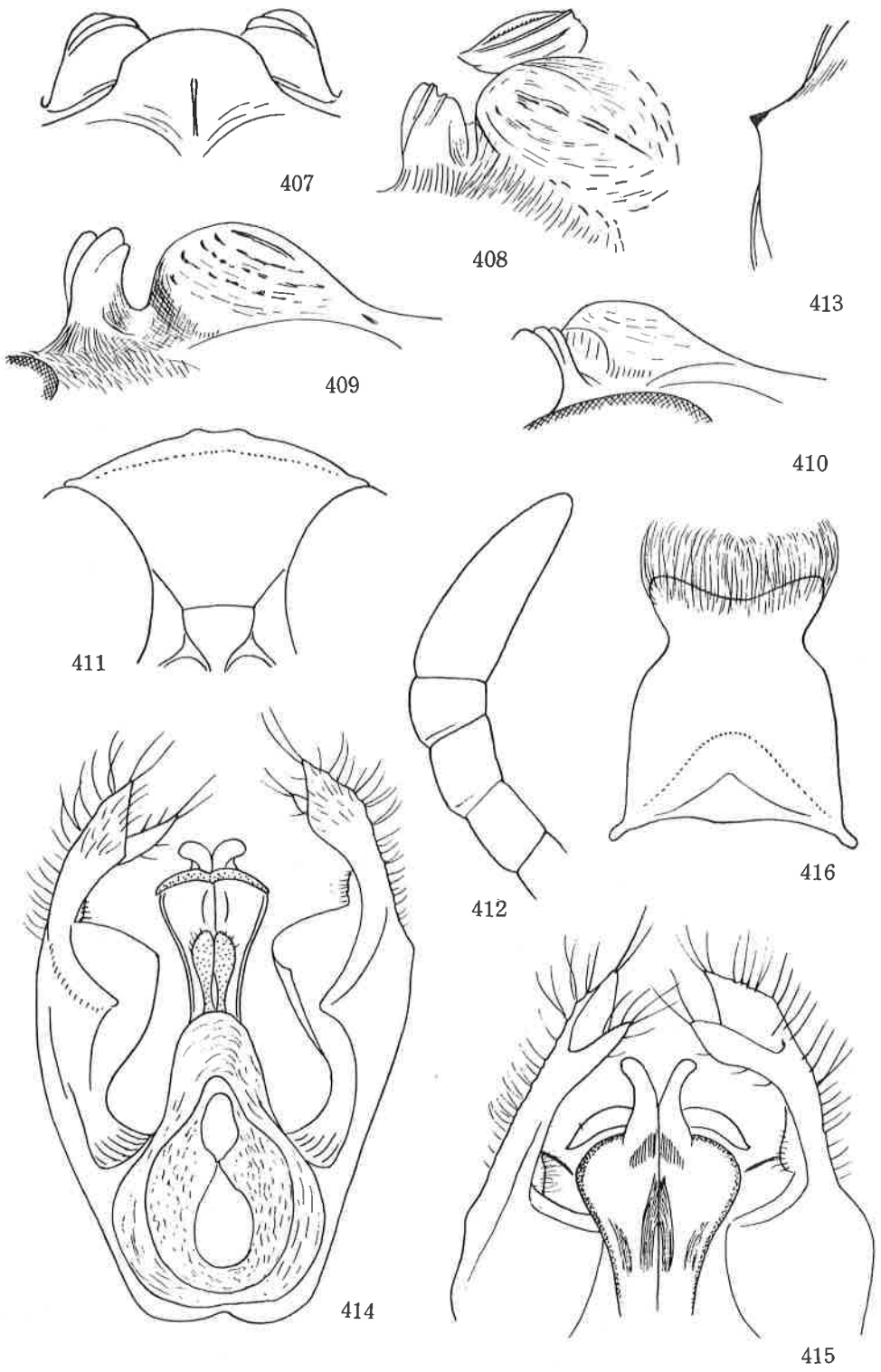
47. TRYPOXYLON SEMICOMPLUVIUM SP. NOV.

Diagnosis. ♂, 12 mm. Characterisitic in that subalar area is provided with half developed pent-roof structure, that is, outer margin of the area acutely edged along the curved dorsal margin of of subalar pit, but the edge is only slightly produced and not expanded broadly to cover completely the pit wall which is vertically flattened, Gl flask-shaped, long, mesoscutum strongly miorocoriaceous, nearly mat, propodeum with lateral carinae, area dorsalis with very weak lateral furrows, IODs=10:9, A3=AW×3, A13=A9-12, fore and mid tibiae largely, hind tibia at base, all tarsi except arolia whitish, hair silvery.

Supplement. Black; antenna dark brown, Al and 2 both at apex ferruginous, apical margin of clypeus castaneous, mandible yellow, apical part narrowly reddish brown, palpi brownish yellow, posterior part of collar discoloured, yellowish, tegula and basal plate of wing brown; fore tibia at apex and folded side, mid tibia at apex and underside broadly brown, basal whitish ring of hind tibia broad, about a third the length of the tibia, mid and hind spurs dark brown. Hair on clypeus parallel.

Head in frontal view with sides rounded and slightly convergent towards clypeus, vertex depressed, tops of hind ocelli slightly below level of tops of eyes, W:L=100:80, eye incision comparatively narrow and gently narrowed towards sinus, dorsal margin of the pair in a straight line, frontal furrow broad and shallow, similar in form from fore ocellus to base of SAT, elevations on both its sides only gentle and long, SAT moderately high nasiform, dorsal area somewhat flattened and broadly carinated in middle, apical margin in vertical view rounded and at verge to PAF edged, but at medio-apical area not edged, forming a small subtriangular flat area, surface of the area not smooth, not shining, not foveate. ASR nearly as high as SAT, acutely tricarinate on dorsum, PAF deep, flat-bottomed, U-shaped in cross section, cf. Figs. 407 (dorsal), 408 (obliquely dorso-lateral), 409 (dorso-lateral to see through PAF), 410 (lateral). Clypeus: Fig. 411, disc almost not raised at base and apical reflection also weak, margin not incrassate in middle. Apical part of antenna: Fig. 412. Occipital carina complete.

HW,HL,IODv,A3,A13,P=100,46,22,19,28,160. IODs=10:9. OOD,Od,POD=1,4,2. A3=AW×3. A3,4,5=10,6,6. A13=BW×3.2, and ≒A9-12. P,Ma,Mi,2(Ma),3(Ma)=100,14,5,42(19),36(21). RC=B, R1 moderately long, not reaching wing apex, CV1=CV2×6, TCV:CV2≒5:3, angle about 110°.



Figs. 407-416. Trypoxylon semicompluvium sp. nov., ♂

Collar in frontal view with dorsal margin obtuse tri ngle, median top slightly swollen, in dorsal view narrow ridge-like, slightly incrassate laterally, lamina on side: Fig. 413, it is strange that the minutely pointed apex is reflected. Acute edge at subalar area only very shortly produced above pit-wall, but posteriorly considerably expanded, pit wall flattened, smooth, but not provided with transverse carinae. Lateral carinae of propodeum distinct, seen from side curved, originating somewhat behind spiracle and ending far before apex, lateral furrows of area dorsalis very feeble, lateral carinae of area apicalis strong and comparatively long, but not curved inwards at anterior end, GSR roundly highly elevated, somewhat discoloured and in lateral view up-curved.

Genitalia closely resemble those of the preceding species, paramere bifurcate at apex, ventral lobe of which is broader than the dorsal, main body expanded, rolled and lamellate on inner margin, outer ventral margin produced in triangle, at the axis of main body there is a longitudinal assemblage of blackish pigment, volsella spatulate as usual and at apical area sparsely covered with pubescence, penis valve with rounded shoulder (not raised high as in banahao, cf. Fig. 405), comparatively long apical processes and slender sickle-shaped appendages (but comparatively somewhat broader than in banahao). The organs seen from beneath: Fig. 414, apical part seen vertically from back side: Fig. 415. Sternite 8: Fig. 416.

Frons very minutely microcoriaceous and sparsely punctured, surface without shine, mesoscutum more distinctly microcoriaceous and more closely superimposed with somewhat finer punctures, PIS 1-2 times PD. Area dorsalis longitudinally shallowly rugoso-punctate with comparatively large punctures, median furrow with bottom line crenate and with posterior portion transversely striate (but the pattern of sculpture may be inconstant), lateral series of striae of the segment distinct, side on dorsal half fairly closely covered with comparatively large distinct punctures, puncture-interspace under high magnification microcoriaceous, lower half smooth and polished, posterior area covered with strong transverse striae.

♀, unknown.

Holotype: ♂, NW of Panay, --, C. F. Baker (USNM).

48. TRYPOXYLON BASILANUM SP. NOV.

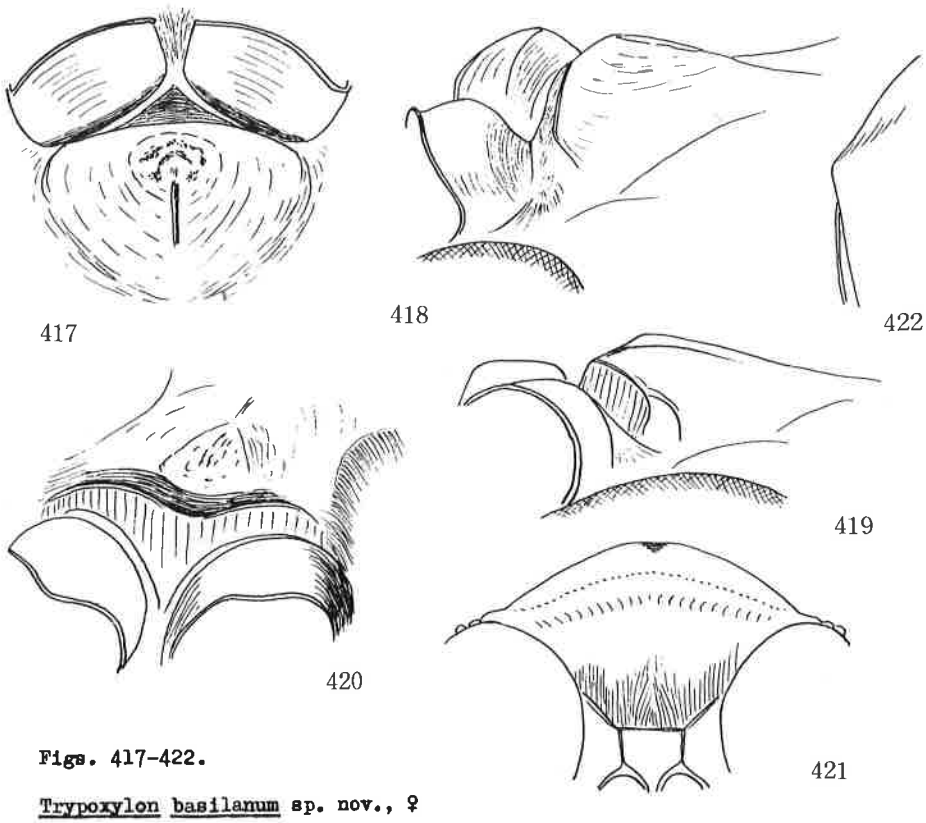
Diagnosis. ♀, 10 mm. Gl flask-shaped, mesoscutum microcoriaceous, propodeum with lateral carinae, IODs=3:2, SAT low tuberiform, PAF deep, flat-bottomed, A3=AW 3.5, fore tibia and tarsus largely, base of mid and hind tibiae, mid Tl and all spurs pale yellowish or whitish, gaster black and medianly somewhat brownish, hair silvery.

Supplement Antenna dark brown, Al and 2 at apices pale, apical area of clypeus semitransparent pale brown, mandible glossy pale brown and at base yellow, palpi amber yellow, posterior part of collar discoloured, tegula and basal plate of wing brown; fore tibia ferruginous, but on folded side and apex brown, fore tarsus yellowish white, T5 slightly brownish, arolium black, hair on clypeus broadly parallel, only at base somewhat curved inwards.

Head in frontal view with sides rounded, almost not convergent towards clypeus, W:L=100:84, vertex not depressed, eye incision comparatively broad and shallow and distinctly narrowed towards bottom, dorsal margin inclined outwards, vertex flattened, each ocellus in a hollow, frons broadly gently raised, medial furrow broad and shallow, SAT low broad tuberiform, medial carina weak, top area widely subflattened, apical margin transverse, very slightly rounded and bluntly edged (Fig. 417, vertical, from dorsal side), ASR raised nearly as high as SAT, anteriorly considerably expanded, surface smooth, only apical margin carinated, PAF acute-V-shaped in cross section (Fig. 418, dorso-lateral), ASR-SAT in lateral view: Fig. 419, in ventro-lateral view: Fig. 420. Clypeus: Fig. 421, disc at base gently raised and at apex fairly strongly reflected and minutely impressed in middle, occipital carina complete and slightly incised behind buccal cavity.

HW,HL,IODv,A3,P=100,52,30,19,140. IODs=10:6.3. OOD,Od,POD=3,4,4. A3=AW×3.6. A3,4,5=10,7,7. P,Ma,Mi,2(Ma),3(Ma)=100,21,7,35(28),42(34). RC=C, Rl short, CV1=CV2×5. TCV:CV2=3:2, angle about 110°.

Dorsum of collar rounded in frontal view, weakly tuberculate in middle, lamina on side: Fig. 422, subalar area normal; propodeum with distinct lateral carinae, upcurved in lateral view, ending far before lateral carina of area apicalis, but not directing towards it, lateral furrows of area dorsalis broad and fairly deep, medial



Figs. 417-422.

Trypoxylon basilanum sp. nov., ♀

furrow widened posteriorly and rounded at apex, area apicalis with short lateral carinae, not curved at anterior end, GSR roundly highly elevated, brown in colour.

Frons delicately microcoriaceous and sparsely superimposed withffine punctures, mesoscutum weakly microcoriaceous, surface fairly shining, punctures fine and deep, PIS 1-2 times PD, lateral series of striae of propodeum strong, area dorsalis on medial furrow transversely striate, on disc sparsely punctured, posterior inclination smooth and polished and scattered with fine hair-bearing punctures, sides except femoral sinus sparsely weakly punctured, only on extreme posterior area transversely striate.

♂, unknown.

Holotype: ♀, Is. Basilan, C. F. Baker (USNM).

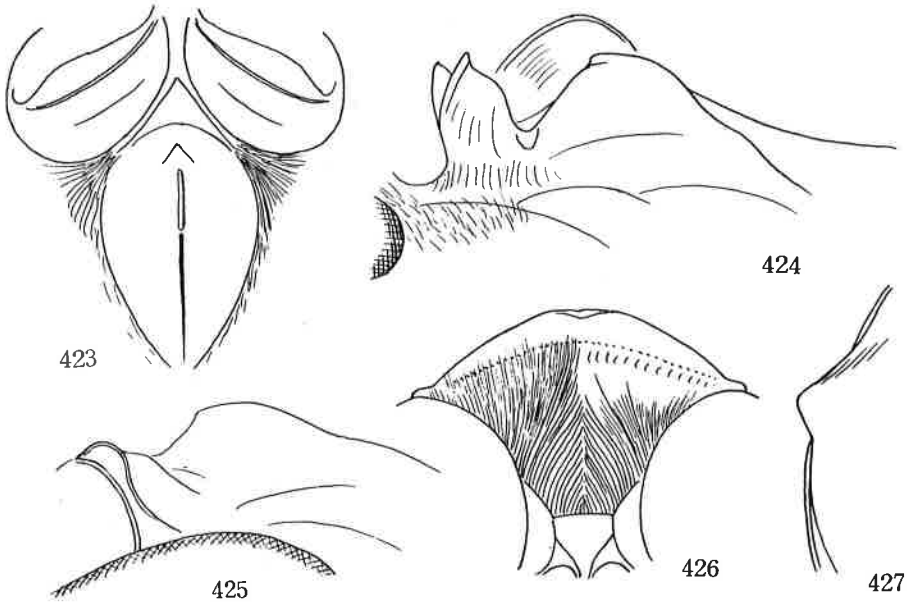
49. TRYPOXYLON REKABUM* SP. NOV.

♀. Possibly 12-13 mm (gaster lacking). Closely resembling T. insulare having hind tarsus wholly black, but can be distinguished from this in that IODs is larger, area dorsalis is not transversely striate and A3 is relatively shorter.

Black, A1 and 2 ferruginous at apices, clypeus castaneous at apical margin, mandible ferruginous and at base yellow, palpi yellow and basally ferruginous, posterior part of collar discoloured, pale brownish, tegula and basal plate of wing brown, fore tibia except folded side, mid tibia at base and apex, hind tibia at base, tibial spurs except brownish longer one of hind leg and fore and mid tarsi except black arolia ferruginous or pale yellowish white. Hair silvery, on clypeus at base distinctly curved towards the medial line.

* Reversed Baker + um

Head in frontal view with lateral margins roundly, weakly convergent below, W:L= 100:88, vertex slightly depressed, tops of hind ocelli in a line with tops of eyes, eye incision comparatively broad and narrowed towards bottom, dorsal margin horizontal, frons roundly, comparatively highly elevated on both sides of medial furrow (similar in grade of elevation to striolatum), the furrow considerably deep, wide V-shaped in cross section, SAT moderately high narrow nasiform and acutely carinated in middle, medio-apical area obliquely inclined to IAA, not polished, ASR highly raised, nearly as high as SAT, but short, acutely bicarinate on dorsum, PAF deep, flat-bottomed, V-shaped in cross section, angel formed by both PAFs at IAA slightly less than 90°, the structure in vertical view (from dorsal side): Fig. 423, dorso-lateral view to see through PAF: Fig. 424, in lateral view: Fig. 425; clypeus: Fig. 426, at base roundly elevated, the elevation continued anteriorly, gradually lowering and narrowing, apical marginal glabrous area distinctly reflected and in middle triangularly impressed. Occipital carina complete, not incised nor depressed behind buccal cavity.



Figs. 423-427. Trypoxylon rekabum sp. nov., ♀

HW,HL,IODv,A3,P=100,54,24,22,---. IODs=10:7. OOD,Od,POD=1,3,2. A3=AW×4.3. A3,4,5=10,7,-. RC=C, R1 short, CV1=CV2×5, TCV:CV2=5:3, TCV and CV2 both only weakly curved, angle about 100°.

Collar of pronotum in frontal view gently roundly raised, with median top weakly tuberculate, lamina on side: Fig. 427, subalar area of mesopleuron normal, outer margin edged on posterior part alone, propodeum with weak lateral carinae, without a distinct impressed line inside along each, but the difference of the surface condition (inside with series of striae and outside smooth and polished) makes it easy to detect it, area dorsalis enclosed with broad shallow but well-defined furrow, medial furrow at base narrow and posteriorly enlarged and shallowed, GSR roundly elevated, brown in colour.

Frons delicately microcoriaceous and very sparsely punctured, mesoscutum very feebly microcoriaceous, under 20× magnification almost unobservable, ×30 magnification defined, punctures fine and sparse, PIS 1-3 times PD, lateral carinae of propodeum very weak, in some light unobservable, series of striae along them not strong, but well-defined, area dorsalis at base without striae, on median furrow obscurely transversely striate, disc finely sparsely punctured, surface fairly shining, but not completely smooth, bearing faint rugae near median furrow and under high magnification with delicate microsculpture; sides rather sparsely covered with fine shallow hair-bearing punctures except polished antero-ventral femoral sinus.

♂, unknown.

Holotype: ♀, Mindanao, Surigao, C. F. Baker (USNM)

Remarks. From the specimen, beside the gaster, the left antenna completely and the right from A5 apically are lost. The rest of the right antenna is dropped off and glued on to the surface of the right eye.

50. TRYPOXYLON LOBATIFRONS TSUNEKI, 1979

Trypoxylon lobatifrons Tsuneki, SPJHA, 9: 131, 1979 (♀, Laos, 6 figs.).

Specimens examined: 1 ♀, Mindanao, Davao, --, C. F. Baker (USNM); 1 ♀, Luzon, Mt. Makiling, Los Banos, Prov. Laguna, 29. III. 1978, C. Nozaka leg. (Coll. Nozaka).

Observation. Length 10 (Mindanao) and 11 (Luzon) mm. Legs black, gaster from apex of G1 to end of G3 red. In the Philippine specimens the elevation of apical margin of SAT (Fig. 428) is somewhat less in degrees as compared with the Laotian holotype and the flat area of SAT without small rounded impression as with in the type, but at verge to PAF distinctly reflected. Lamina on side of pronotum strongly produced (Fig. 429), marginal form of posterior part is strange. Measurements of the Mindanao (within parentheses the Luzon) specimen:

W:L of head in frontal view 100:90 (ditto). HW,HL,IODv,A3,P=100,56,25,25,162 (100,53,25,24,180). IODs=10:9.5 (10:9.2). OOD,Od,POD=2,9,4 (1,4,2). A3=AW 4 (AW 4.3). A3,4,5=10,7.5,6 (10,6.5,6). P,Ma,Mi,2(Ma),3(Ma)=100,18,6,30(20),33(30) (100, 15,5,30(19),31(28)).

Vertex only slightly depressed, eye incision broad and shallow,narrowed towards bottom, dorsal margin inclined outwards, occipital carina complete, strong and high, but weaker beneath, clypeus with apical margin medianly markedly roundly produced, as given with figure in the original description. Lateral carina of propodeum distinct, directing towards lateral carina of area apicalis, the carinae widely open at the dorsal part of the area, GSR roundly elevated, lateral furrows of area dorsalis

428

429

Figs. 428-429.

Trypoxylon lobatifrons Tsuneki, ♀

distinct, but not deep. RC=C, R1 very short, CV1=CV2 2.7 (4.3), TCV=CV2 (TCV:CV2= 9:7), TCV strongly (weakly) bent in middle, angle at base about 90 (ditto) (CV2 downcurved near the angle). Microsculpture on mesoscutum weak, but well defined under 20 magnification, with surface considerably shining.

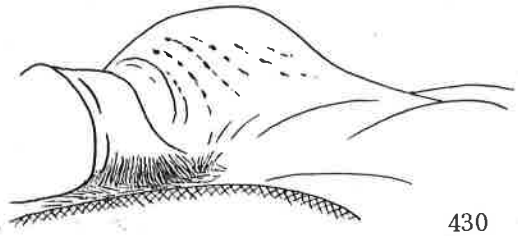
Remarks. From the Mindanao specimen the left wings and the right hind leg are lost.

51. TRYPOXYLON BUKIDNON SP. NOV.

♀. Closely resembles T. striolatum m., can be distinguished therefrom, however, by the completely black gaster and legs. Mandible and palpi in the present species are also much darker than in striolatum. Both species are sympatric at least in Mindanao, and they are not in the subspecific relationships.

Black, mandible shining dark brown, medianly slightly paler, palpi dark brown ! and apically somewhat paler, posterior part of collar discoloured, dusky yellowish, tegula dark brown, basal plate of wing nearly black, fore and mid tibial spurs somewhat whitish. Hair silvery, on clypeus at base strongly sinuately convergent towards the medial line, at apical area mixed with half erected long hair that is produced long beyond the apical margin.

Head in frontal view with sides roundly, slightly convergent towards clypeus, vertex slightly depressed, tops of hind ocelli raised above level of tops of eyes, W:L=100: 88, eye incision comparatively narrow and deep, subparallel-sided, dorsal margin horizontal, round elevations on frons considerably high, medial furrow fairly deep, the state well resembles that of striolatum, SAT high nasiform, but in dorsal view somewhat thicker than in striolatum, lateral inclinations oblique, in lateral view (Fig. 430) dorsal line strongly and roundly up-curved, ASR obliquely raised, bicarinate on dorsum which is much below top level of SAT, PAF moderately deep, up-curved, V-shaped in cross section (Fig. 431, dorso-lateral). Clypeus (Fig. 432) very similar to that of the typical form of striolatum, disc at base roundly raised and at apex strongly reflected, medio-apical protuberance incrassate and roundly bevel-



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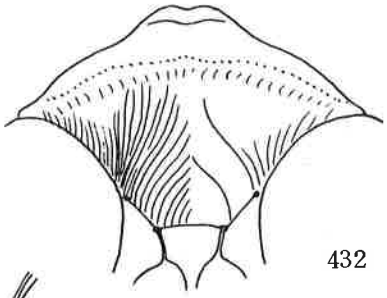

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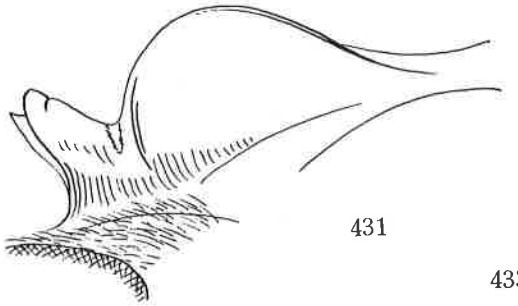


431

433

Figs. 430-433.

Trypoxylon

bukidnon sp. nov., ♀

led anteriorly and shining black in colour, palpi similar in form and relative length but much darker in colour as compared with striolatum.

HW,HL,IODv,A3,P=100,52,26,25,156. IODs=10:8. OOD,Od,POD=1,3,2. A3=AW 4. A3, 4,5=10,6.5,6. P,Ma,Mi,2(Ma),3(Ma)=100,20,7,35(22),36(32). RC=B, R1 short, CV1=CV2 4, TCV=CV2, both nearly straight, angle about 120 .

Occipital carina complete and comparatively high, minutely incised behind buccal cavity. Collar with dorsal margin in frontal view in broad triangle and weakly tuberculate on top, lamina on side: Fig. 433, with apical area reflected (hatched area), subalar area of mesopleuron normal. Lateral carinae of propodeum distinct, at the posterior end directing nearly to the lateral carina of area apicalis, but not reaching there, the carina not curved anteriorly towards dorsal middle, area dorsalis with shallow broad lateral furrows, the furrow not reaching base of the segment, GSR not elevated.

Frons minutely microcoriaceous and sparsely superimposed with fine punctures, surface half mat, mesoscutum much more weakly microcoriaceous, with punctures deeper and more distinct, but irregular in distribution, PIS 1-2 times PD, on medial area punctures sparser. Series of striae along lateral carinae of propodeum strong and coarse, extending inwards, covering whole the surface of area dorsalis and posterior inclination as fine close transverse striae, sides except antero-ventral femoral sinus sparsely covered with strong striae.

♂, unknown.

Holotype: ♀, Mindanao, Bukidnon, Mt. Katanglad, 1480 m, 27-31. X. 1959, Malaise trap, L. Quate & C. M. Yoshimoto (BPBM).

Other specimen: 1 ♀, same data (BPBM), but the gaster is lacking.

Remarks. In the other specimen the transverse striae on the area dorsalis except medial and lateral furrows are very feeble and mixed with punctures that alone are conspicuous on the disc and the surface appears quite different from the holotype.

52. TRYPOXYLON MINDANAONIS TSUNEKI, 1976

Trypoxylon mindanaonis Tsuneki, Steenstrupia, 4: 84, 1976 (♀, Mindanao, Sapamora, figs.)
Trypoxylon bakerianum Tsuneki (ssp.), SPJHA, 9:135, 1979 (♀, Singapore, figs.).
Trypoxylon bakerianum (ssp. fortius) Tsuneki, Ibid., 11: 33, 1979 (♀ ♂, Java, figs.).
Trypoxylon mindanaonis (ssp. mulu) Tsuneki, Ibid., 12: 72, 1980 (♀ ♂, Borneo, fig. with ssps).

Specimens examined:

Luzon.
Los Banos, 1 ♀, C. F. Baker (USNM); 1 ♀ 1 ♂, 1917, F. X. Williams (HMNH); 1 ♀ 3 ♂, 1917, F. X. Williams (BPBM).
Mt. Makiling, 2 ♀, --, C. F. Baker (USNM).
Mt. Montalban, Rizal, Wa-wa Dam, 150-200 m, 2 ♂, 25. II., 24. III. 1965, H. M. and L. M. Torrevillas (BPBM).
Manila, 1 ♂, 24. I. 1953, Townes family (AEI).
Pagsanjan, Prov. Laguna, 1 ♀, 7-9. VIII. 1979, H. Kurokawa (Coll. Kurokawa).
Hidden Valley Spring, Alaminos, Prov. Laguna, 1 ♂, 3-4. IV. 1978, T. Murota (Coll. Murota).
Basilan. 1 ♀, --, C. F. Baker (USNM).
Busuanga. 1 ♂, 4 km North of San Nicolas, 1. VI. 1962, H. Holtmann, Malaise trap (BPBM).

The present species is closely related to T. nigripes m., nishidai m. and bakerianum m. and in Pt. VI of the present series (SPJHA, 12, 1980) I already synonymized bakerianum with the present species and gave comparative characters of the local races in the form of the key.

In the original description of T. mindanaonis the structure of SAT-ASR is quite insufficiently treated, although the hollow on rear side of ASR is already alluded to and certainly illustrated. In the following supplemental notes on the main characters of the holotype female is first given in comparison with the above listed close relatives and then some comments on the island-populations of the Philippines.

Reexamination of the holotype female.

SAT-ASR: Figs. 434 (dorsal), 435 (vertical), 436 (obliquely lateral), 437 (obliquely dorso-lateral) and 438 (ditto, but from more below).

HW,HL,IODv,A3,P=100,52,26,22,174. IODs=10:9. OOD,Od,POD=1,5,4 (OOD is very narrow). A3=AWx4. A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,16,5,24(20),28(28). RC=B (both wings with apical part is rubbed down), Rl short, CV1=CV2x3, TCV÷CV2, TCV weakly sinuate, CV2 at apex down-curved as usual.

Differs from the above listed close relatives in that:

(1) Gaster is completely black.

(2) Mesoscutum more distinctly microcoriaceous and sparsely superimposed with fine punctures, PIS 3-4 times PD.

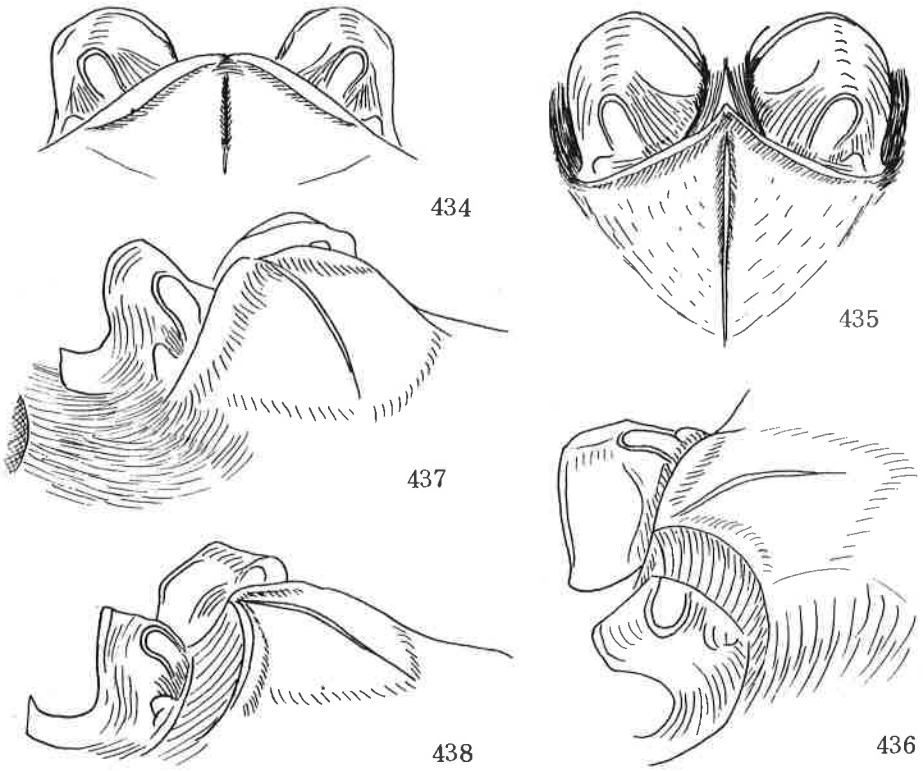
(3) Frons nearly flat, median line only somewhat glossy due to weaker sparser sculpture or punctuation.

(4) Lateral furrows of area dorsalis very weak, almost lacking, defined only by a series of strioles covering the furrows.

(5) SAT broader triangular in vertical view (with apical margin incrassate at verge to PAF and reflected as given in the figures.

(6) The hollow on the posterior aspect of ASR begins at posterior part of dorsal aspect and curved down posteriorly.

Medio-apical produced part of clypeus gently emarginate, GSR highly raised, apirounded area slightly curved posteriorly in lateral view, mesopleuron normal.

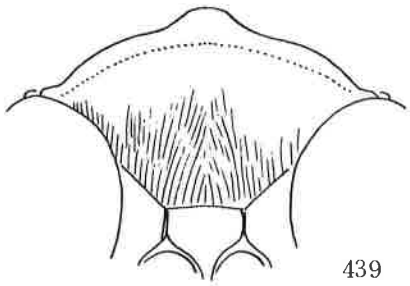


Figs. 434-438. Trypoxylon mindanaonis Tsuneki, ♀ (holotype)

On other Philippine specimens.

(A) Luzon specimens (6 ♀ 8 ♂).

♀. Gaster is medianly (extreme apex and apical sides of G1, whole of G2 and G3 except blackish posterior portion) red, spurs whitish, but longer hind spur brown. In the fresh specimens recently collected sometimes fore tarsus at articulations and on T4-5 ferruginous. Apical angle of SAT in vertical view always less than 90°(70°-80°), distinctly more acute than in the Mindanao type. Frons on anterior part broadly gently concave, sometimes nearly flat, clypeus: Fig. 439. Microsculpture and puncture on frons and mesoscutum fairly strong and distinct, on mesoscutum, further, sparse, especially on median area.


439

Judging by the characters mentioned above the Luzon females fall within the category of ssp. fortius.

♂. Medio-apical angle of SAT in vertical view considerably variable, sometime less than 90°and sometimes nearly 90°, but in most of the specimens greater than 90°, frequently reaching about 120°. Clypeus: Fig. 440. Microsculpture on frons also more or less variable, but never so weak as indistinct, mostly well-defined, punctures on frons always distinct, anterior excavation usually present, sometimes surface nearly flat; sculpture and puncture on mesoscutum strong and distinct, punctures sparse as in ♀. Gaster and legs always black, but tibial spurs as in ♀.

According to the characters mentioned the male also belongs to ssp. fortius.

(B) Basilan specimen (1 ♀).

♀. Gaster black, A3=AW×3.5, A5=AW×2.2, frons flat, SAT at verge to PAF carinated and raised, PAF comparatively broad, IODs=10:9.5. RC=B, CV1=CV2×3.3, TCV≒CV2, angle about 90°.

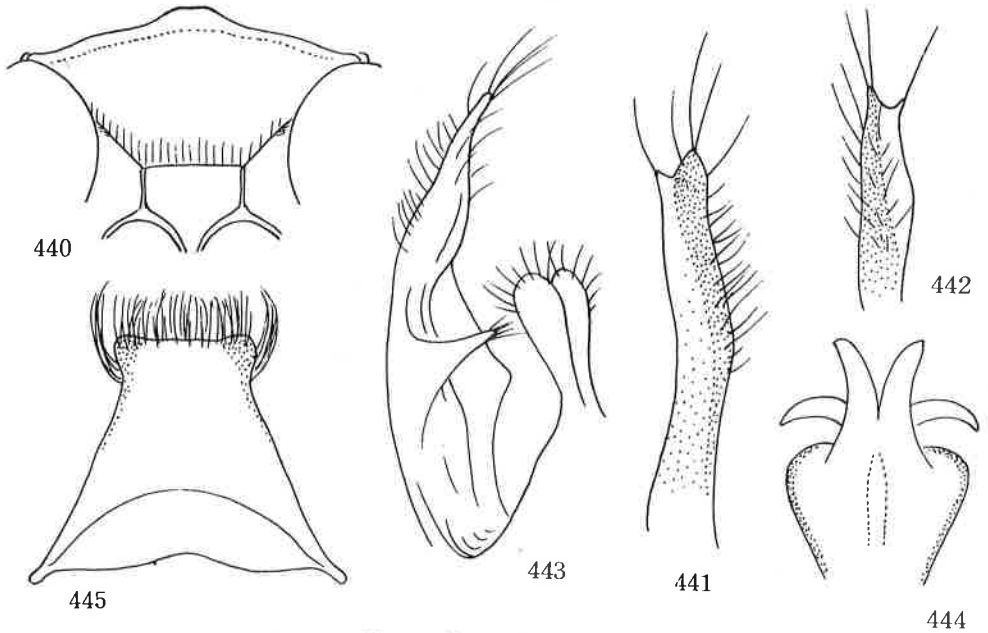
Judging from the characters the Basilan specimen belongs to ssp. mindanaonis, although A3 and IODs are intermediate between this subspecies and ssp. mulu occurring in Borneo (In reality IODs=10:9 and 10:10 are within the variation range of the same toxon).

(C) Busuanga specimen (1 ♂).

♂. Apart from that the disc of area dorsalis is largely striate the characters well agrees with those of ssp. fortius.

Genitalia and 8th sternite.

The organs were examined with one of the fresh specimens captured in Luzon (Prov. Laguna, Alaminos, Hidden Valley Spring, 3-4. IV. 1978, T. Murota). Of the facts confirmed especially note-worthy is that the paramere is not deeply bifurcate at apex, but very shortly so at extreme apex. Apparent deep bifurcation is due to the border line of differently pigmented areas. In reality the part is not split. Fig. 106 of Pt. V (with Javanese fortius ♂) is a result of being deceived by the pigment line. Fig. 441 (left paramere, dorso-lateral, from outer side) and Fig. 442 (ditto, ventro-lateral, from inner side) show the fact. The long slender process at about mid point of inner ventral margin of paramere (Fig. 443, left paramere and volsella, ventro-lateral) is characteristic of this group. Penis valve (Fig. 444, dorsal, vertical) is common form, having well developed shoulder and slender sickle-shaped appendages. Sternite 8 (Fig. 445) is similar in pattern of structure to that the Javanese population, but relatively much wider at base than in this (cf. Fig. 107 of Pt. V). Possibly, however, this is, at least partly, based on the different curving of the body of the sternite at the time of desiccation. But it differs more strikingly from that of the Bornean subspecies, mulu (cf. Fig. 241 of Pt. VI).



Figs. 240-245. Trypoxylon mindanaonis Tsuneki, ♂.

Measurements. Table 8 shows clearly that there are differences between the sexes in the values of IODv, A3 and ocellar location and that the length ratio of CV1 as against CV2 is comparatively constant and can be utilized to some extent as one of the characters of the species. Similarly the relations, TCV=CV2 and angle=90 , are also constant, although the values are not given in the Table. As to ssp. mulu of Borneo vide Table 6 of Pt. VI of the present paper (p. 72).

Table 8. Measurements on Trypoxylon mindanaonis Tsuneki (s. l.)

Loco	Sex	B L	IODv	A3	A13	P	Ocelli	IODs	Ma	Mi	CV1/CV2
Los Banos	♀	7.5	28	22	--	164	2 5 5	9.0	16	5.5	3.3
Los Banos	♀	8.5	26	22	--	166	1 5 4	9.5	17	5.5	3.3
Makiling	♀	9.0	27	22	--	176	2 7 4	10.0	17	5.0	3.4
Makiling	♀	7.8	28	22	--	174	1 4 4	9.5	16	5.5	3.3
Pagsanjan	♀	9.5	27	22	--	178	1 5 4	9.5	17	6.0	3.7
Mindanao*	♀	8.5	26	22	--	174	1 5 4	9.0	16	5.0	3.0
Basilan*	♀	8.0	26	21	--	168	1 5 4	9.5	17	5.5	3.3
Java	♀	7.8	26	22	--	185	2 6 5	10.0	15	5.0	3.4
Singapore**	♀	8.0	27	21	--	167	4 11 9	- -	--	- -	3.8
Singapore**	♀	8.0	26	22	--	-	4 12 11	- -	--	- -	3.2
Los Banos	♂	7.0	33	14	28	152	2 4 4	9.5	18	6.0	3.0
Los Banos	♂	7.3	32	14	29	166	2 4 3	9.0	17	5.5	3.4
Los Banos	♂	7.0	32	14	28	160	2 4 3	9.0	16	5.5	3.0
Alaminos	♂	7.5	33	14	27	144	2 4 3	9.0	17	6.0	3.0
Manila	♂	7.5	32	14	30	160	2 3 3	9.0	16	6.0	3.3
Montalban	♂	7.5	33	14	28	152	2 4 4	9.0	17	7.0	3.3
Montalban	♂	7.3	34	14	30	156	3 4 4	9.0	16	5.0	2.8
Busuanga	♂	8.0	30	13	28	160	2 4 3	9.5	15	6.0	3.0
Java	♂	7.5	31	15	30	144	2 4 3	9.0	16	5.5	2.8
Singapore**	♂	7.5	31	14	--	154	2 5 4	9.0	16	6.0	3.0

Remarks. B L ... Body length (mm). IODv, A3, A13, P ... Relative value as against HW 100. Ocelli ... OOD,Od,POD. IODs ... Relative value of IODo as against IODv 10. Ma, Mi ... Relative value as against P 100. Loco without asterisk ... ssp. fortius. Loco with * ... ssp. mindaonis. Loco with ** ... ssp. bakerianum.

On the male of TRYPOXYLON MINDANAONIS BAKERIANUM Tsuneki, 1979

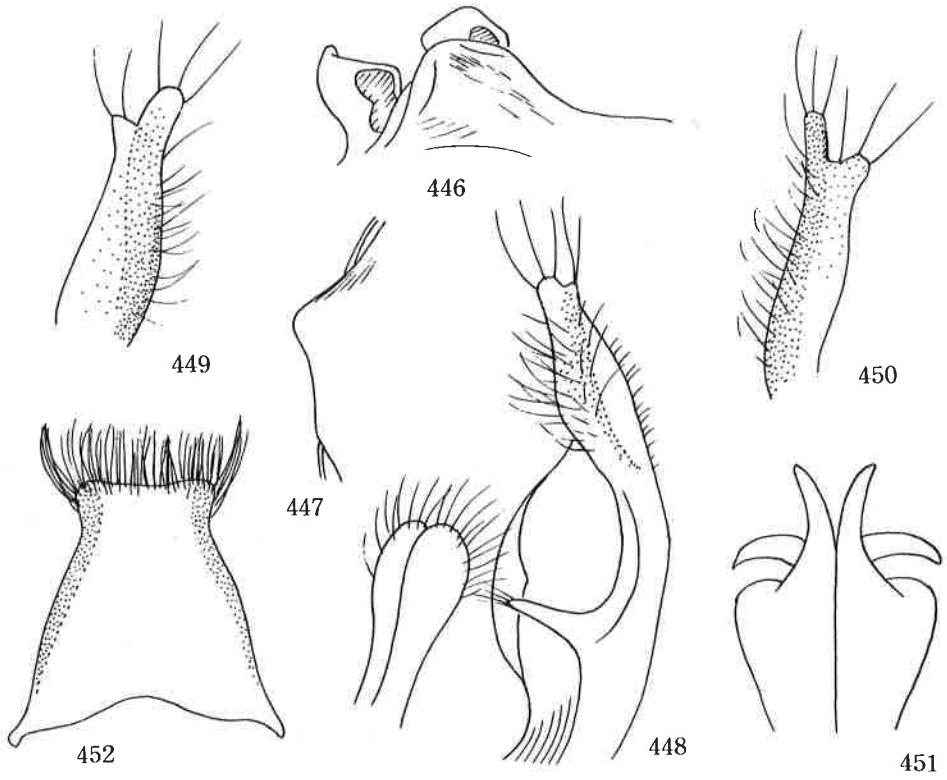
A single male specimen collected by C. F. Baker at Singapore (possibly together with other female specimens already recorded in Pt. III of the present paper) is discovered from among the Philippine specimens of T. mindanaonis s. l. That the male was unknown at the moment of description was the serious obstacle to the determination of the taxonomic situation of bakerianum as against the closely allied species, nigripes and nishidai. Later it was determined through the examination of the Javanese male specimens that were considered a subspecies of bakerianum. Now, by the observation of the genital organs of the present specimen the correctness of this determination has been confirmed. In order to make clear the relationships among the subspecies of T. mindanaonis main characters of ssp. bakerianum ♂ are given in the following:

Length 7.5 mm. Antenna, clypeus, gaster and legs black, legs apically more or less brownish, tibial spurs except brownish longer one of hind leg whitish, mandible on basal half black and rest dark brown, palpi brown, basally darker.

Head in frontal view with sides rounded, very gently convergent towards clypeus, W:L=100:85, vertex not depressed, eye incision broad and shallow, gently narrowed toward sinus, with dorsal margin slightly inclined below outwards, SAT-ASR as usual in the present species, medio-apical of SAT in vertical view about 90°, with apex minutely rounded. Fovea of ASR very large, occupying posterior half of dorsum and greater part of posterior inclination (Fig. 446, dorso-lateral), clypeus as in ssp. fortius (cf. Pt. V. fig. 101 and Fig. 440 of the present Part).

HW,HL,IODv,A3,A13,P=100,54,31,14,--,154. IODs=10:9. OOD,Od,POD=2,5,4. A3=AW×2.2. A3,4,5=10,7.5,7.5. P,Ma,Mi,2(Ma),3(Ma)=100,16,6,28(24),34(36). RC=B, R1 short CV1=CV2×3, TCV≒CV2, both gently curved, angle about 90°.

Dorsum of collar in frontal view roundly, somewhat subtriangularly elevated, in middle slightly incrassate, in dorsal view anterior part short and considerably widened towards sides, lamina on side: Fig. 447, distinctly produced. Propodeum with distinct lateral carinae, accompanied just inside by series of strong striae, area dorsalis distinctly enclosed with comparatively deep furrow which is till base distinct, GSR triangularly highly elevated, discoloured, slightly curved in lateral view.



Figs. 446-452. Trypoxylon mindanaonis bakerianum Tsuneki, ♂

Genitalia is, of course, very similar to those of ssp. fortius. Volsella and right paramere in ventro-lateral view (from right side): Fig. 448. Apparently the paramere is deeply bifurcate at apex, but in reality is not, apparent outer marginal line of apparent ventral lobe is only the outer margin of pigmented area, never split, this is distinct in lateral view, only apex is hhortly bifid as given in Figs. 449 (right, seen from inside) and 450 (right, from outside), just as proved in the Philippine fortius. Apical part of penis valve in dorsal and vertical view: Fig. 451. 8th sternite also similar to that of ssp. fortius (Fig. 452, cf. Fig. 445).

Frons very minutely, but distinctly microcoriaceous and indistinctly superimposed with sparse and weak punctures, mesoscutum similarly finely but more weakly microcoriaceous, with punctures sparse and fine, but deep and more distinct than on frons, Area dorsalis at base obliquely shortly, on median furrow and posterior half transversely, coarsely striate, median area on disc without striae, but with irregular and weak rugae, not shining, posterior inclination largely smooth and shining, sides on dorsal half very sparsely punctured, PIS with very feeble microsculpture, posteriormost area very coarsely rugoso-punctate.

53. TRYPOXYLON APICUM SP. NOV.

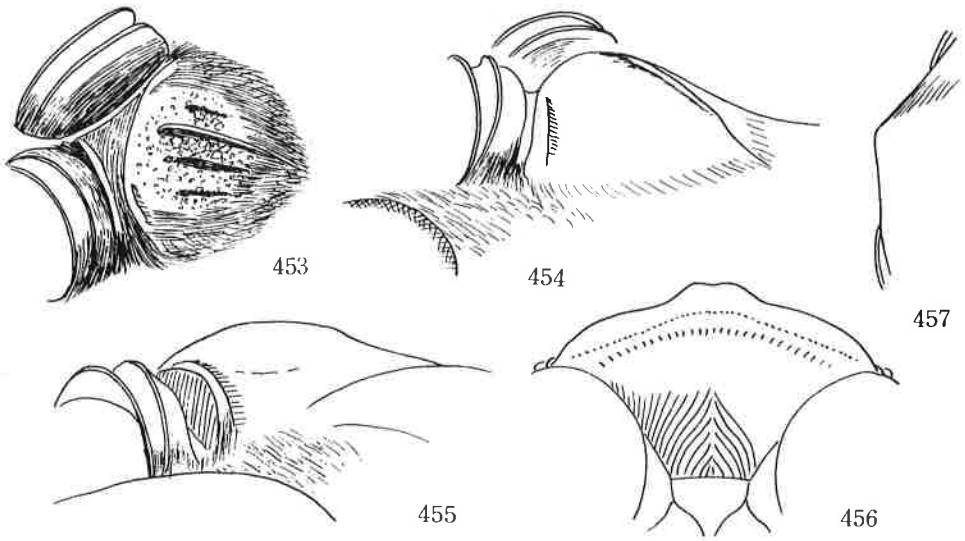
♀. Resembles mindanaonis, but larger, tarsi apically pale brown, RC=C, SAT tuberiform, anterior margin rounded in vertical view and not edged nor carinate, frons more strongly microcoriaceous and more distinctly punctured, mesoscutum almost mat.

Length about 12 mm. Black; antenna dark brown, clypeus at apical margin somewhat brownish and on sides paler, mandible at base black, rest ferruginous, palpi basally dark brown, apically brownish white, gaster black, but from apex of G1 to base of G3 brownish- or dark red and black above, tarsi dark brown, gradually paler

apically, T4, 5 nearly pale brown, spurs, including loner hind one, yellowish white. Hair silvery, on clypeus at base convergent towards medial line.

Head in frontal view with sides roundly, slightly convergent towards clypeus, v vertex slightly depressed, but tops of hind ocelli slightly above level of tops of eyes, eye incision moderate in width, deep, subparallel-sided, dorsal margin of the pair in a straight line; frons gently raised, surface nearly flat, only very weakly and broadly furrowed in middle. ASR-SAT: Figs. 453 (latero-vertical, from left side), 454 (dorso-lateral), 455 (lateral), SAT low broad tuberiform, medio-apical area somewhat flattened, smoothly inclined to IAA, but at verge to PAF bluntly edged, ASR nearly as high as SAT, rather short and acutely bicarinate on dorsum, PAF deep, flat-bottomed, somewhat inclined from IAA outwards, U-shaped in cross section. Clypeus: Fig. 456, disc at base considerably raised and at apex strongly refleced, (occipital carina unobservable beneath).

HW,HL,IODv,A3,P=100,50,25,24,140. IODs=10:7.7. OOD,Od,POD≒1,3,2. A3=AW×4.7. A3,4,5≒10,7,6. P,Ma,Mi,2(Ma),3(Ma)=100,18,6,30(23),38(32). RC=C. R1 short, but reaching close to wing apex. CV1=CV2×4.5. TCV:CV2≒5:3, TCV nearly straight, angle about 100°.



Figs. 453-457. Trypoxylon apicum sp. nov., ♀

Collar in frontal view with dorsal line roundly raised and weakly swollen in middle, lamina on side: Fig. 457, subalar area normal. Propodeum with distinct lateral carinae, carina in lateral view up-curved, with posterior end far before apex and directing towards basal middle of hind coxa, area dorsalis at base transversely elevated, with lateral furrow shallow but distinct, only at base obsolete, lateral carinae of area apicalis anteriorly curved, but the area widely open upwards.

Frons distinctly microcoriaceous and fairly closely superimposed with fine distinct punctures, PIS 1-1.5 times PD; mesoscutum more weakly microcoriaceous, under 2 20 magnification somewhat difficult to observe, but surface mat, punctures similar in size and distribution to those of frons, but weaker. Propodeum with distinct lateral series of strioles, area dorsalis on posterior portion transversely striate, disc irregularly covered with indistinctly outlined punctures, outside the area and posterior inclination smooth and shining, but closely covered with hair, sides shining, only sparsely covered with fine punctures, posterior part transversely striate.

♂, unknown.

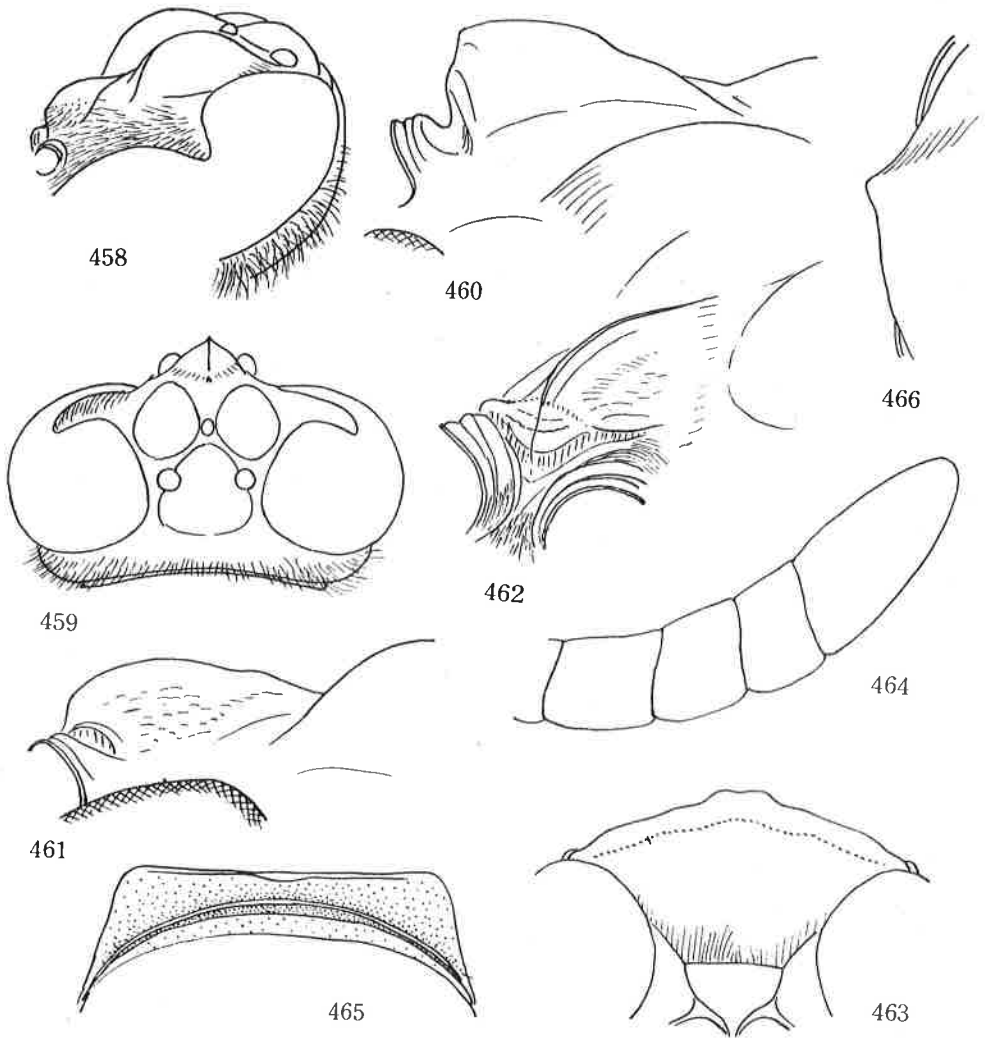
Holotype: ♀, Luzon, Mt. Makiling, 1000 m, 30. IV. 1968, M. D. Delfinado (BPBM).
Paratype: 1 ♀, same data, but D. E. Hardy leg., at mud spring (BPBM).

54. TRYPOXYLON TRITUBERCULATUM SP. NOV.

The present species is characteristic in having three large rounded and high swellings on head (Fig. 458, in oblique lateral view) and can easily be separated from other congeners.

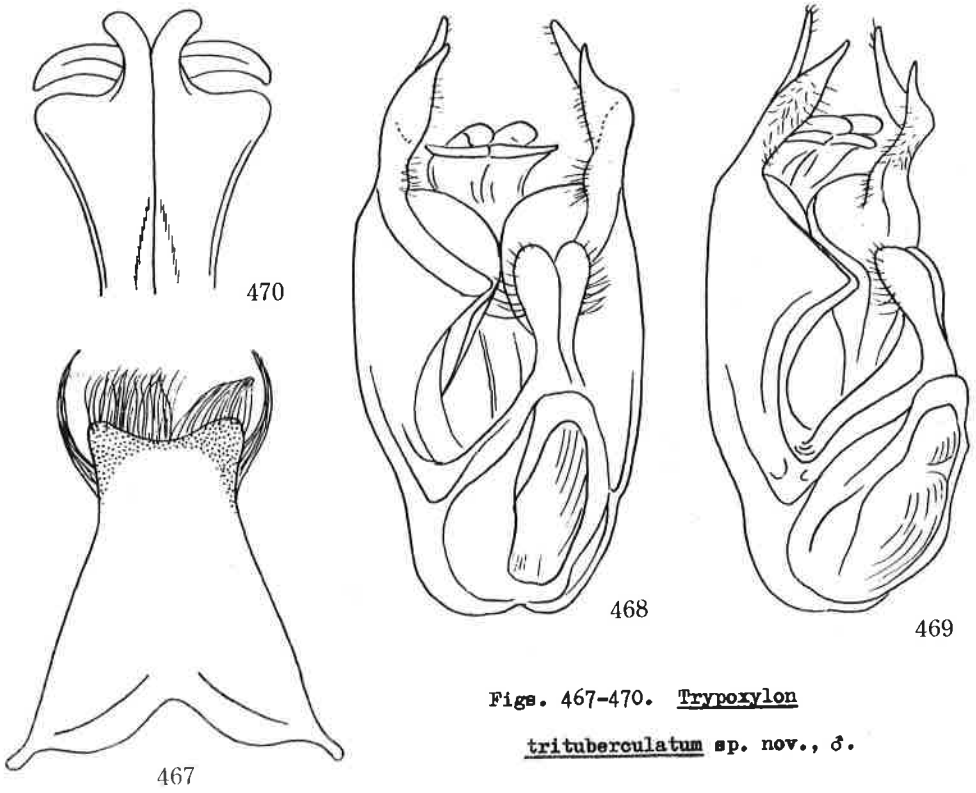
♂, 7.5-11.0 mm, usually 10 mm or so. Black; mandible ferruginous, at extreme base black, palpi ochre yellow and basally brown, articulations of legs somewhat brownish, tibial spurs (including the longer one of hind leg) white. Hair silvery, on clypeus parallel, only at base somewhat curved inwards.

Head in frontal view with sides rounded, very slightly convergent towards clypeus, W:L=100:87, eye incision broad and comparatively shallow, distinctly narrowed towards bottom, dorsal margin inclined outwards. Vertex at ocellar area and frons on each side of medial furrow broadly, roundly and markedly highly elevated, elevations occupying transversely the full width of frons and longitudinally ranging from above level of fore ocellus to below level of upper end of SAT, frontal furrow very deep,



Figs. 458-466. Trypoxylon trituberculatum sp. nov., ♂

due to lateral high elevations, with fore ocellus at upper end and gradually widened anteriorly, SAT high nasiform, acutely carinated in middle, with lateral inclinations oblique and flat, with anterior margin fairly acutely inclining to IAA, forming a rhombic area which is medianly longitudinally bluntly carinated (or tectate) and transversely rugoso striate (Fig. 462, ventro-lateral), sometimes one of the striae



Figs. 467-470. Trypoxylon trituberculatum sp. nov., ♂.

becomes particularly distinct, appearing to be transversely carinated across middle), verge to PAF always acutely edged, usually raised also to form a blunt carina (Figs. 461 and 462), ASR highly raised, but with dorsum much below top level of SAT, tri- or quadri-carinated, PAF fairly deep, flat-bottomed, inclining towards IAA, therefore, outer end of PAF located high above level of scapal hollow. Head in dorsal view: Fig. 459 (with three elevations), SAT-ASR in dorso-lateral view to see through PAF: Fig. 460, in lateral view: Fig. 461. Clypeus: Fig. 463, medio-apical area always somewhat incised, appearing bluntly bidentate, basal elevation very weak, apical reflection considerable; occipital carina complete, but depressed behind buccal cavity. Measurements in holotype:

HW,HL,IODv,A3,Al3,P=100,50,30,19,18,168. IODs=10:8. OOD,Od,POD=1,5,2. A3=AW×2.8. A3,4,5=10,7,5.5. Al3=BW×2.2 and slightly longer than All+12 (Fig. 464). P,Ma, Mi,2(Ma),3(Ma)=100,16,6,30(20),30(26). RC=B, R1 short, CV1=CV2×6, TCV:CV2÷5:3, angle about 120°.

Anterior part of collar characteristic in form, dorsal side from transverse furrow anteriorly raised obliquely, with surface flat and at the apical margin bluntly edged, thence acutely inclined to nape area, in lateral view the angle formed by dorsal aspect and anterior inclination less than 90°; the edged anterior margin in dorsal view broadly roundly emarginate (Fig. 465), thus the anterior part short in middle and gradually enlarged towards sides, but never roundly incrassate, the part in frontal view with dorsal line gently roundly elevated and in middle weakly tuberculate, lamina on side: Fig. 466, apex somewhat toothed. Subalar area of mesopleuron normal. Propodeum with distinct lateral carinae, the carina up-curved in lateral view, posteriorly ending far before apex of the segment and the end not directing to lateral

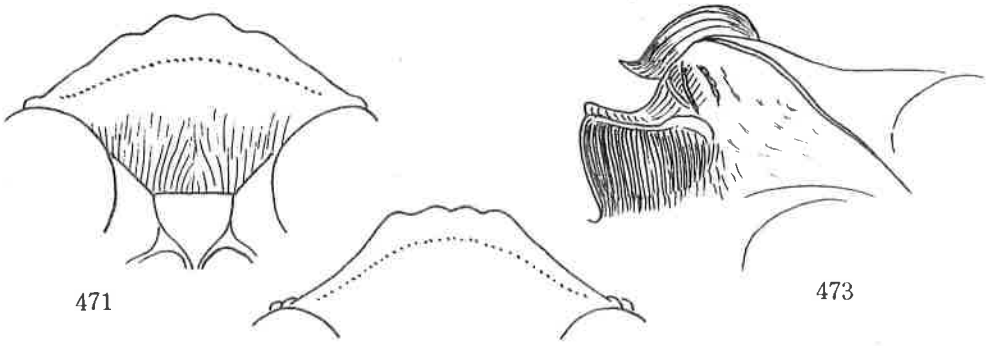
carina of GSR, but towards mid point of hind coxal base; area dorsalis at base raised, forming a transverse smooth area, as if to have a second postscutellum, with distinct lateral furrows, lateral carinae of area apicalis curved upwards, sometimes completely encloses the area, but sometimes interrupted in middle more or less by extended medial furrow of posterior inclination, GSR roundly and highly elevated, discoloured, in lateral view curved at apical area. Sternite 8: Fig. 467.

Genitalia seen obliquely from beneath: Fig. 468. Paramere deeply bifid at apex (Fig. 469, more lateral), inner margin broadly expanded, lamellate and rolled, volsella spatulate, with sparse fringe of hair at outer margin of apical area, penis valve bearing well developed shoulder and a pair of comparatively broad sickle-shaped appendages (Fig. 470, dorsal).

In fore wing CV1=CV2×6 in holotype, but the value is inconstant, varying between ×4 and ×6, while the angle formed by TCV and CV2 is rather constant, always nearly 120°.

Frons and vertex on broad top areas of their tubercles smooth and shining (under high magnification feeble microreticulation observed), with comparatively large and deep punctures sparsely scattered, on medial furrow and marginal areas of the tubercles microsculpture distinct and punctures (similar in size and depth) close. Mesoscutum with strong plumbeous shine, without microsculpture and finely sparsely punctured, punctures distinctly finer than those on frons and weaker, indistinct in outline, laterally somewhat close, but PIS 1-2 times PD. Propodeum at basal elevation smooth, on the area just behind it obliquely and on the rest of area dorsalis transversely, strongly and coarsely striate, sides except antero-ventral femoral sinus obliquely finely striate and also strongly fairly closely punctured.

♀. 11-13 mm. Similar in general to ♂, but head in frontal view slightly longer (W:L=100:90), with lateral margins more distinctly narrowed below, clypeus longer (Fig. 471), at base more highly elevated and at apex more strongly reflexed, the form of medio-apical undulation more or less varied (Fig. 472). Eye incision similar in form, not narrower, not subparallel-sided, not with dorsal margin horizontal, this is exceptional. Antennal joints except ultimate one longer.



471 472 473

HW,HL,IODv,A3,P=100,50,28,24,184. IODs=10:8. OOD,Od,POD=1,4,9. A3=AW×4. A3, 4,5=10,8,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,14,4,30(15),34(22). Venation similar.

Holotype: ♂, Luzon, Mt. Makiling, --, C. F. Baker (USNM).

Paratypes: 26 ♀ 14 ♂:

Luzon. Prov. Laguna. Los Banos. 4 ♀, C. F. Baker (USNM); 3 ♀ 4 ♂, 1916, VII-VIII. 1917, III.-VI. 1925, X-XI. 1915, IV. 1916, 1917, F. X. Williams (BPBM); 2 ♀ 4 ♂, (Botanical Garden), 30. III, 2-5. VIII. 1978, T. Murota (Coll. Murota); Mt. Makiling. 1 ♀ 1 ♂, C. F. Baker (USNM); 1 ♀, 30. II. 1968, 1000 m, Mud Spring, D.E. Hardy (BPBM). Pagsanjan. 3 ♀, 2. IV, 7-9. VIII. 1978, T. Murota (Coll. Murota); 1 ♂, 2. IV. 1978, T. Tano (Coll. Tano); 1 ♀ 2 ♂, 7-9. VIII. 1978, H. Kurokawa (Coll. Kurokawa). Alaminos, Hidden Valley Spring. 4 ♀, 3-4. IV. 1978, T. Murota (Coll. Murota); 1 ♀, 3-4. IV. 1978, T. Tano (Coll. Tano). Prov. Albay. St. Domingo. 1 ♀, 17. VIII. 1978, C. Nozaka (Coll. Nozaka). Prov. Rizal. 1 ♀, Mt. Montalban, Wa-Wa Dam, 150-200 m, 6. III. 1965, L. M. Torrevillas (BPBM). 1 ♀, Mt. Banahao, C. F. Baker (USNM). Prov. Mountain. 1 ♀, Ifugao, Mayoyao, 1000-1500 m, 9. VII. 1966, H. M. Torrevillas (BPBM); 1 ♀, near Bontoc, 1000 m, 31. XII. 1979, T. Murota (Coll. Murota); 1 ♀, Asin Spa, 16 km from Baguio, 600 m, 2. I. 1980, T. Murota (Coll. Murota).

Biliran. 1 ♀, --, C. F. Baker (USNM).
Bet. (?) 1 ♂, Nasugbu, 28. II. 1959, H. Townes (AEI).

Other specimens. 1 ♀, Los Banos, C. F. Baker (clypeus abnormal - USNM); 1 ♂, Mt. Montalban, Wa-Wa Dam, 150-200 m, 11. III. 1965, L. M. Torrevillas (left ASR-PAF abnormal - BPBM); 1 ♀, Is. Panay, Northwestern region, C. F. Baker (both antennae largely lacking and head thickly covered with resin - USNM); 1 ♀, Los Banos, 31. III. 1978, T. Murota (Coll. Murota); 1 ♀, Los Banos, 31. III. 1978, T. Tano (Coll. Tano); 1 ♀, Naguilion near Baguio, sandy water bed, 28. III. 1978, T. Murota (Coll. Murota) - the 3 ♀ have the clypeus strongly rubbed down, with apical margin simply rounded.

Remarks. (1) In one of the female specimens from Los Banos (Baker leg) the apical margin of the clypeus is abnormal (Fig. 472), appearing regular quadridentate. (2) In the other one of the females from the same locality (also Baker leg.) the left PAF is at the outer end blocked with the dike extended from ASR which is abnormally medianly longitudinally acutely carinate and at the posterior end swollen to discular elevation (Fig. 473), but the right ASR-PAF is normal.

(3) The present species is common and abundant in the island of Luzon. This is shown by the results of the collections of C. F. Baker, F. X. Williams and especially by the recent exploration of the Japanese Sphecidologists. The species has been captured also in the Islands of Panay and Biliran, but is not from other Islands. This is by no means the chance result, because C. F. Baker extensively tried the collection over the southern islands also and obtained abundant specimens of other species of this genus. The fact of such a limitted distribution seems to me curious and the solution of its cause will be an interesting problem to the native investigators.

55. TRYPOXYLON BALABACENSE TSUNEKI, 1976

Trypoxylon balabacense Tsuneki, Steenstrupia, 4: 89, 1976 (♀, Balabac)

Some supplement based on the revision of the holotype

The original description of this species is detailed, with figures of the head seen in front, the supraantennal structure in ventro-lateral view and the form of the area dorsalis. But it is of little use to the final species identification based on the method adoped by the present study, because the explanation of the supraantennal structure is insufficient and the figure given is not sufficiently detailed.

According to the reexamination of the holotype specimen, although markedly different in the colour of the gaster, the present species is very close in the structural characters to T. nigrifemur described from Laos (Pt. III, p. 87), especially in the very deep PAF and IAF that are completely level with, or rather somewhat lower than, the scapal excavations of the frons. In the following characters further, the present species is very similar to nigrifemur m.: Frontal elevations on both sides of medial furrow (grade of elevation, form and size of its outline), clypeus (apical form - cf. Fig. 321 of Pt. III. - , state of the disc and coloration), pronotal structure with its lamina, characters of propodeum (lateral carinae, area dorsalis, with its furrows, general surface condition and GSR). Slight differences from the compared species:

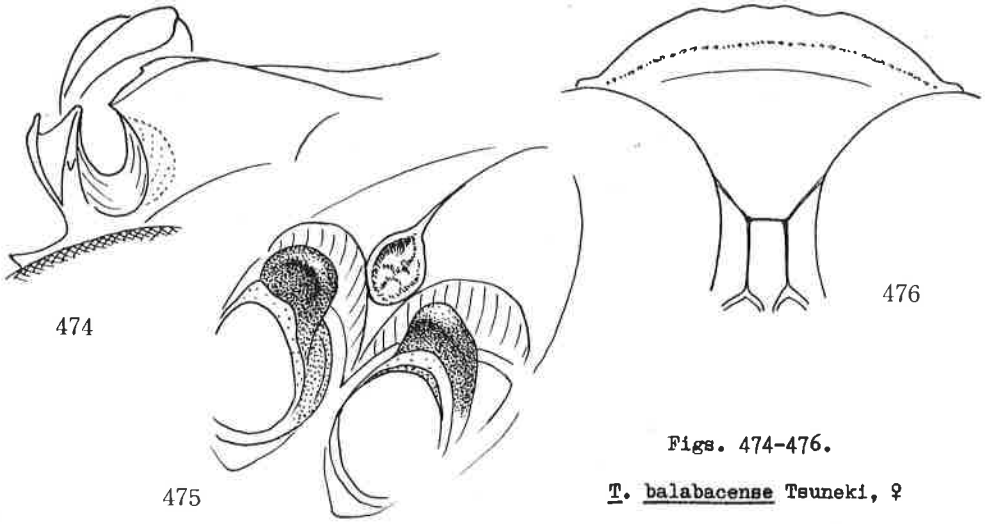
1. RC=M (in nigrifemur C-type).
2. Head seen in front more rounded (in nigr. convergent below).
3. Lateral furrows of area dorsalis finer (but similarly deep).
4. Size distinctly smaller, 9 mm (in nigr. 12 mm).
5. In colour gaster wholly black, only somewhat brownish on G2-3 beneath (in nigrifemur except petiole completely ferruginous), A1-2 similarly ferruginous yellow (but in the present species A2 blackish above), but A3 dark brown (in nigr. largely yellow). Except that mid tarsus is more broadly yellowish white in nigrifemur, the colouration of the legs is fundamentally similar.

Measurements: HW,HL,IODv,A3,P=100,50,23,25,150. IODs=10:4. OOD,Od,POD=1,4,2 (strictly 3,12,7). A3=AW×6. A3,4,5÷10,6.5,5.5. P,Ma,Mi,2(Ma),3(Ma)=100,20,6 (just behind basal condyle, before apical swelling 7),30(20),34(29). RC=M, somewhat close to C, CV1=CV2×4, TCV:CV2÷5:4, angle about 110°.

Frontal furrow broad and deep, anteriorly behind SAT enlarged into a rhombic excavation, round elevations on both sides considerably high. SAT-ASR: Figs. 474 (dor-

so-lateral to see through PAF) and 475 (ventro-lateral). SAT nasiform, with a round flat and obliquely inclined area anteriorly (surface not smooth), ASR bicarinate, anteriorly amber yellow and posteriorly black, posterior carina highly raised and markedly reflected, PAF very deep, flat-bottomed, oval in cross section. Clypeus: Fig. 476. Occipital carina complete. Collar in frontal view gently roundly raised and in middle weakly tuberculate; subalar area of mesopleuron normal. Lateral carinae of propodeum distinct, but short, well-defined on median part only.

Microsculpture on frons very weak and indistinct, punctures comparatively large, PIS=PD; mesoscutum more finely and more sparsely punctured, PIS shining, without microsculpture.



Figs. 474-476.

T. balabacense Tsuneki, ♀

Apical margin of clypeus broadly ferruginous, posterior part of collar discoloured, coxae at apex, trochanters wholly, femora at base, fore tibia except folded side, fore tarsus except arolium, bases of mid and hind tibiae and mid T1 and 2 except apex yellowish white.

Remarks. The compared Laotian species may be in a subspecific relationships with the present species.

56. TRYPOXYLON ERRANS SAUSSURE, 1867

Trypoxylon errans Saussure, Voyage de Novara, Hym., p. 84, 1867 (♀, Mauritus Is.).
Trypoxylon errans: Saussure, Hist. Madagascar, 20. Hist. Nat. Hym., p. 527, 1892 (♀, Madagascar).
Trypoxylon intrudens Smith (in Horne), Trans. Zool. Soc. London, 7 (3): 188, 1870 (♀, NW India)
Trypoxylon canaliculatum Cameron, Mem. Manchester Lit. Phil. Soc., (4) 11: 122 (India).
Trypoxylon philippinense Ashmead, Can. Ent., 36 (10): 283, 1904 (♂, Manila).
Trypoxylon gardineri Cameron, Trans. Linn. Soc. London, Zool., (2) 12: 76, 1907 (♀, Seychelles, Soetivy).
Trypoxylon ornatipes Cameron, Ind. For. Res., 4 (2): 24, 1913 (♂, India, nec W. Fox, 1801) --- T. indicum Menke, World Sphec. Wasps, p. 346, 1976 (nom. nov.).
Trypoxylon tanoi Tsuneki, Etizenis (Fukui), 22: 13, 1967 (♂ ♀, Formosa); Ibid., 54: 7, 1971(do); Pol. Pism. Ent., 44: 630, 1974 (Thailand, with suggestion to syn. of intrudens and canaliculatum); = T. tanoi of Japanese authors (Formosa).
Trypoxylon intrudens: Tsuneki, canaliculatum: Tsuneki, philippinense: Tsuneki, ornatipes: Tsuneki, SPJHA,8, 1978 (redescr. type, synonymy).
Trypoxylon errans: Tsuneki, SPJHA, 9: 114, 1979 (♀ ♂, Mauritius Is., Rodrigues Is.,

Seychelles Is. (Muhe Is.), Ceylon, India, Nepal, Burma, Cambodia, Malaya and Thailand).

Trypoxylon errans: Tsuneki, Ibid., 10: 20, 1979 (♀, Ceylon).
Trypoxylon errans: Tsuneki, Ibid., 11: 28, 1979 (♀, Java, Sumatra, Sumba).
Trypoxylon errans: Tsuneki, Ibid., 12: 87, 1980 (♀, Celebes).

Specimens examined:

Luzon. Los Banos, 1 ♀, 1917, F. X. Williams (BPBM); 1 ♂, 31. III. 1978, C. Nozaka (Coll. Nozaka); 4 ♀ 2 ♂, 31. III. 1978, 10 ♀ 6 ♂, 2-5. VIII. 1978, T. Murota (Coll. Murota). Manila, 3 ♀, --, R. Brown (USNM); 3 ♀, 20. X. 1920, VI. 19-24, R. C. McGregor (USNM). Antipolo, 1 ♀, 9. IX. 1945, H. E. Milliron (BPBM). Pagsanjan, 1 ♀ 3 ♂, 1-2. IV. 1978, T. Tano (Coll. Tano); 2 ♀, 7-9. VIII. 1979, H. Kurokawa (Coll. Kurokawa); 2 ♀ 6 ♂, 1-2. IV. 1978, 1 ♀, 7-9. VIII. 1978, T. Murota (Coll. Murota). Naga, 1 ♀, 14. VIII. 1978, T. Murota (Coll. Murota).
Leyte. 1♂, 12. VIII. 1958, H. Townes (AEI).
Negros. Dumaguete, 390 m. 1 ♀, 7-11. VI. 1958, H. E. Milliron (BPBM); 1 ♀, 3. X. --. -- (BPBM); 1 ♀ 1 ♂, Taytay, 4-5. IV. 1979, C. Nozaka (Coll. Nozaka).

Remarks. It is strange that the present species has not been collected in the southern part of the Philippines. The fact may have some connection with that the species does not occur in Borneo also. However, before taking up the fact as problem further exploration of the areas in question is necessary, because the investigation of the areas made so far is too insufficient.

In the male specimen from Leyte fore trochanter above broadly and mid and hind ones except base and apex are dark brown. Such a colouration is quite exceptional in this species and must be taken into consideration in case of making the key to the species. In the specimen, however, hind T4 is pale in colour as is usually the case in this species.

The male of TRYPOXYLON SAMARENSE SP. NOV.

The specimen was first considered a distinct species and described as such. Later, during the revisional process it was found that it should be combined with T. samarense nov. (♀) as its different sex. In the following the first full description will be given as it is, because of difficulty of alteration of the related matter:

Diagnosis. ♂, possibly 12-13 mm. Gaster is lacking, but judging from the characters of the head and antennae G1 is presumed to be flask-shaped. Propodeum without lateral carinae, area dorsalis enclosed with weak furrow, mesoscutum without microsculpture, SAT tuberiform, acutely carinated in middle, PAF moderately deep, upcurved, clypeus rounded out, IODs=10:8, A13÷A9-12, antenna and legs more or less brown, spurs whitish except longer one of hind tibia, hair silvery.

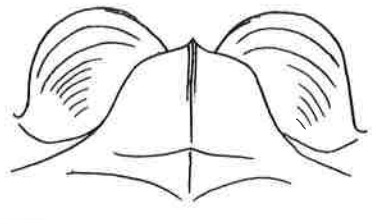
Clypeus apically brownish, mandible ferruginous, at base black and at apex dark brown, palpi dirty yellow, at base brownish, posterior part of collar discoloured, tegula and basal plate of wing brown. Hair on clypeus at medio-basal area weakly turned towards medial line.

Head in frontal view with sides roundly convergent below, W:L=100:82, vertex not depressed, eye incision comparatively broad, but subparallel-sided, dorsal margin slightly inclined outwards, frontal elevations gentle, but median furrow comparatively deep and broad, SAT posteriorly with sides obliquely inclined, but anteriorly roundly swollen, median carina highly raised, apical margin not edged, nor bearing round flat area, ASR raised, but distinctly below top level of SAT, transversely tricarinate on dorsum, PAF V-shaped in cross section, bottom line upcurved, SAT-ASR in dorsal view: Fig. 477, in dorso-lateral view: Fig. 478, lateral view: Fig. 479 (the curvature and the state of the dorsal margin may more or less vary); clypeus: Fig. 480 (disc longer than usual in ♂), supraclypeal area small and short, basal elevation only gentle, but the elevation extended anteriorly, apical reflection moderate, apical part of antenna: Fig. 481, occipital carina complete.

HW,HL,IODv,A3,A13,P=100,46,27,16,28,--. IODs=10:8. OOD,Od,POD=4,7,6. A3=AW×2.6. A3,4,5=10,7,6.5. A13=BW×3.4 and ÷A9-12. RC=C, R1 short, CV1÷CV2×6, TCV:CV2÷5:3, TCV gently incurved, angle about 90°.

Collar transverse, anterior part narrow ridge-like, but widened towards sides, apical margin broadly emarginate, but not edged, sides roundly swollen, in frontal view roundly elevated and somewhat tuberculate in middle, lamina on side triangular-

ly strongly produced, with apical area obliquely raised or reflected (Fig. 482); subalar area of mesopleuron normal, but postero-lateral edge more acute than usual and somewhat pointed in middle. Propodeum at base with a slightly raised and shining area and thence area dorsalis begins, lateral carina of the segment very obscurely present practically lacking, lateral carinae of area apicalis curved upwards, but the dorsal part of the area not completely enclosed, GSR roundly elevated, but not strongly so.



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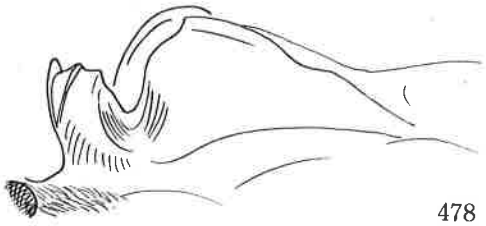

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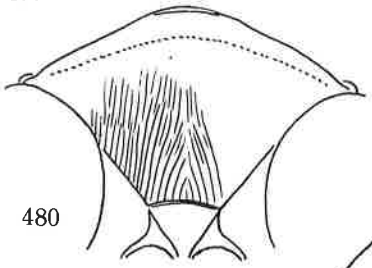

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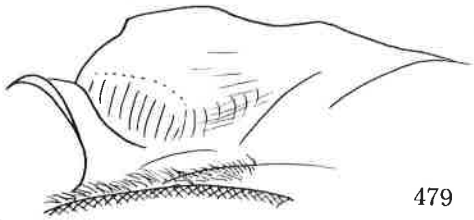

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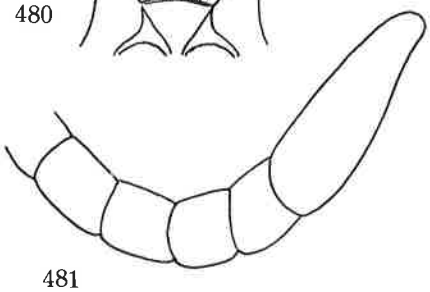

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Figs. 477-482. Trypoxylon samarense sp. nov., ♂

Frons distinctly microcoriaceous and fairly closely superimposed with comparatively large but shallow punctures, PIS=PD, mesoscutum without microsculpture, very finely and sparsely punctured, surface shining, propodeum with strong and distinct lateral series of strioles, they are on posterior part of posterior inclination extended inwards to form a band of arcuate carinae in front of area apicalis, area dorsalis at base weakly crenate, on medial furrow transversely feebly striate, disc smooth and shining, posterior inclination also smooth, area apicalis largely smooth and polished, only with very fine hair-bearing points sparsely scattered.

Paratype: 1 ♂, Is. Basilan, C. F. Baker (USNM) (gaster lacking).

58. TRYPOXYLON TAWITAWIENSE TSUNEKI, 1976

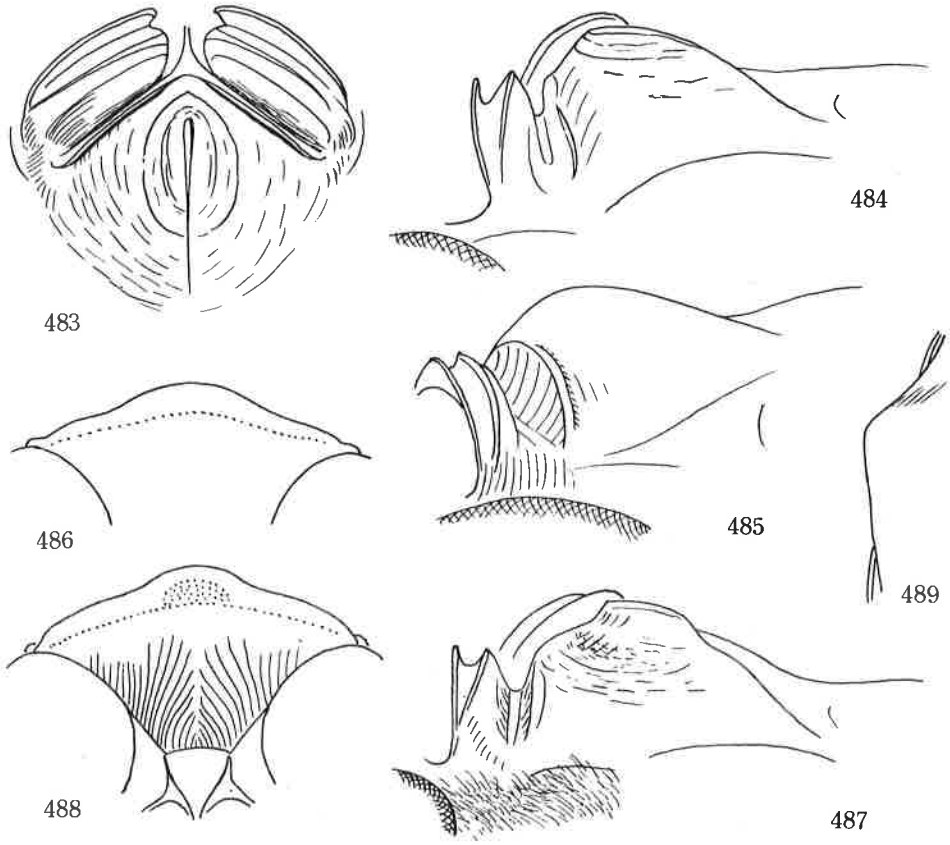
Trypoxylon tawitawiense Tsuneki, Steenstrupia (Copenhagen), 4:86, 1976 (♂, nec ♀)
Trypoxylon tawitawiense: Tsuneki, SPJHA, 12: 77, 1980 (♂, ♀ is identified with T. striolatum Tsuneki, 1979).

As to the result of the reexamination of the holotype (♂) and the paratype (♀) specimens of the present species detailed explanation was already given in connection with T. striolatum of Borneo in which the paratype female was separated from the male and identified with T. striolatum m.

Here, the main characters of the male are first given and then those of the true female of tawitawiense that was newly discovered from among the specimens treated in the study of the present Part.

♂. 9-10 mm. Black; from apex of G1 to G 3 ferruginous, with large black marks above; pale yellowish white on legs are fore tibia except folded side, bases of mid and hind tibiae, spurs except both of hind tibia, fore tarsus and mid T1; collar with posterior part discoloured.

Head in frontal view with sides rounded, almost without convergence towards clypeus, vertex not depressed, W:L=100:82, eye incision broad and strongly narrowed towards sinus, dorsal margin distinctly inclined outwards, frontal elevations gentle, median furrow broad and week, SAT-ASR: Figs. 483 (vertical), 484 (dorso-lateral), 485 (lateral), SAT at verge to PAF acutely edged and inorassate at the marginal area, PAF deep, flat-bottomed, U-shaped in cross section, ASR strongly bicarinate; clypeus: Fig. 486.



Figs. 483-489. Trypoxylon tawitawiense Tsuneki. 483-486, ♂; 487-489, ♀.

HW,HL,IODv,A3,A13,P=100,48,27,17,22,131. IODs=10:8. OOD,Od,POD=2,4,3. A3=AW×3.3. A3,4,5=10,6,5.5. A13=BW×2.5 and slightly longer than A10-12, with apex not curved. P,Ma,Mi,2(Ma),3(Ma)=100,24,8,38(33),38(41). RC=C. R1 short. CV1=CV2×5. TCV:CV2≒5:3. TCV sinuate, angle about 100°.

Collar transverse, slightly roundly widened towards sides, in frontal view gently, nearly roundly raised towards middle and weakly tuberculate there, subalar area normal, propodeum with lateral carinae, area dorsalis enclosed with furrow.

Genitalia resembles those of trituberculatum (Figs. 468, 469), paramere bifid at apex into two slender lobes, ventral one broader, bearing haired swollen area at base of inner margin, volsella spatulate, penis valve with well-developed shoulder and sickle-shaped appendages, but the appendages not particularly broader.

Frons distinctly microcoriaceous and closely superimposed with comparatively large punctures, PIS≒PD, mesoscutum without microsculpture, very finely (far more

finely than on frons) punctured, PIS 1-2 times PD, PIS shining, propodeum with distinct lateral series of striae, area dorsalis on medial and lateral furrows transversely striate, disc sparsely punctured, punctures larger than those of mesoscutum, only on posterior portion transversely striate.

Specimen: Tawi Tawi, Tarawakan, 3. XI. 1961, Noona Dan Exp. (ZMUC).

The following specimen is considered to represent the true female of tawitawiense m.:
1 ♀, Basbas Is., 13. IV. 1967, Malaise trap, M. D. Delfinado (BPBM).

For comparison with striolatum ♀ and tawitawiense ♂, description is given in detail:

Length 10.0 mm. Black; mandible ferruginous, apically brownish, palpi ochre yellow, gaster from apex of G1 to base of G4 ferruginous, carrying a large blackish mark on G2 and 3 respectively; pale yellowish white on legs: fore tibia except folded side and apical area (both brown), bases of mid and hind tibiae, tibial spurs except hind ones (dark brown), fore tarsus except arolium and mid T1 except apex. Hair silvery, on clypeus at base considerably curved towards medial line, on disc mixed with half erected longer ones.

Head in frontal view very similar in outline to the male (Fig. 99 of the original description), with sides strongly rounded and very slightly narrowed below, vertex only slightly depressed, tops of hind ocelli in a line with tops of eyes, eye incision comparatively broad and subparallel-sided, dorsal margin horizontal or even slightly raised outwards, frontal elevations gentle, median furrow broad and shallow, SAT-ASR very similar to tawitawiense ♂, SAT tuberiform, top area nearly flattened, carrying an elongate mound that includes the medial carina (flattened and shining area is left narrowly around the mound), verge to PAF edged and slightly incrassate, ASR raised and strongly bicarinate on dorsum, totally black, hind carina with top area slightly deviated outwards as compared with that of fore carina, PAF deep, flat-bottomed, narrow U-shaped in cross section, the structure in dorso-lateral view to see through PAF: Fig. 487. Clypeus with apical margin as given in Fig. 488, very similar in pattern of structure to that of tawitawiense ♂ (cf. Fig. 486), disc gently round raised from base medianly to base of apical reflection which is considerable.

HW,HL,IODv,A3,P=100,52,26,24,136. IODs=10:7.5. OOD,Od,POD=2,8,7. A3=AW×4. A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,22,7,32(28),40(37). RC=M, but somewhat close to C, CV1=CV2×5.5, TCV:CV2≒5:3, TCV weakly sinuate, angle about 120°. R1 short, but reaching fairly close to wing apex.

Collar similar in structure to that of tawitawiense ♂, lamina on side: Fig. 489. Subalar area normal, propodeum without basal elevation, with distinct lateral carinae, area dorsalis with distinct lateral furrows, the form of the outline of the area also similar (cf. Fig. 102 of the original description), GSR roundly raised, amber yellow in colour.

Frons distinctly microcoriaceous and closely superimposed with comparatively large punctures, punctures partly contiguous to each other, mostly PIS≒PD or slightly smaller than PD, mesoscutum without microsculpture, finely, fairly closely punctured, also PIS≒PD, but on median area sparser; propodeum with lateral series of striae, anteriorly weaker, posteriorly strong, area dorsalis at base obliquely shortly striate, on median furrow and posterior part of the area transversely striate, lateral furrows crenate, disc covered with indistinctly outlined shallow but comparatively large punctures, sides smooth and polished and sparsely scattered with fine hair-bearing punctures except antero-ventral femoral sinus.

The characters of the female above described are well consistent with those of tawitawiense ♂ and there is little doubt that it represents the other sex of the species.

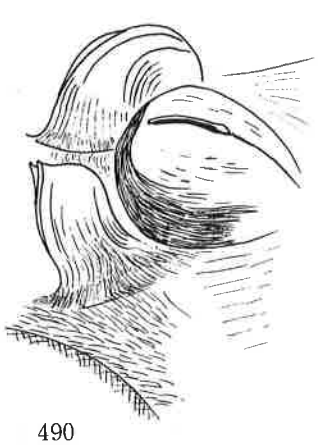
59. TRYPOXYLON HALCON SP. NOV.

Diagnosis. ♀, 16 mm. Tibial spurs and fore and mid tarsi brownish yellow, hair silvery, G1 flask-shaped, mesoscutum without microsculpture, propodeum with feeble lateral carinae, area dorsalis with faint lateral furrows, surface finely closely punctured, IODs=4:3, SAT tuberiform, PAF deep, flat-bottomed, apical margin of clypeus medianly weakly incised, RC=C.

Black, apical margin of clypeus narrowly castaneous brown, mandible yellow and

at extreme base black, at apex dark brown, palpi yellow, posterior part of collar not discoloured, only apical margin narrowly brownish, tegula semitransparent brown, fore and mid tarsi dirty yellow beneath, slightly brownish above, apically fairly deep brown, spurs pale brownish white, longer one of hind tibia slightly darker; hair on clypeus at base distinctly convergent medially.

Head in frontal view with lateral margins rounded, somewhat narrowed towards clypeus, vertex weakly depressed, tops of hind ocelli in a line with tops of eyes, W: L 100:87, eye incision moderate in width and distinctly narrowed towards bottom, dorsal margin horizontal, frontal elevations roundly swollen, medial furrow deep, wide V-shaped in cross section, hence round elevations on both sides marked, SAT at base nasiform, but anteriorly widened, rounded, and as a whole tuberiform, median ridge thick, but carina acute, rather short, verge to PAF edged, but not carinate, to IAA roundly inclined, ASR highly raised, but not reaching top level of SAT, apical margin



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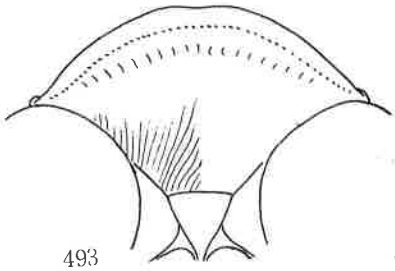

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Figs. 490–494.

Trypoxylon halcon

sp. nov., ♀.

alone highly carinate, PAF deep, flat-bottomed, U-shaped in cross section, the structure in obliquely dorso-lateral view: Fig. 490, from more below to see through PAF: Fig. 491, in profile: Fig. 492. Clypeus: Fig. 493, at base roundly raised and at apex broadly reflected.

HW,HL,IODv,A3,P=100,47,25,24,160. IODs=10:7.5. OOD,Od,POD=2,4,3. A3=AW×4.8. A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,19,7,32(22),36(27).

Dorsum of collar in frontal view subtriangularly raised, somewhat roundly swollen in middle, in dorsal view anterior part as long as posterior part in middle and gradually incrassate laterally and rounded at the sides, anterior margin broadly and roundly emarginate, lamina on side triangular, distinctly produced (Fig. 494); subalar area of mesopleuron normal, but postero-lateral edge somewhat more acute than usual and continued to mesopleural flange, propodeum at base transversely furrowed, the furrow margined posteriorly with fairly high carina, lateral carinae of the segment very feeble, lateral furrows of area dorsalis also very feeble, lateral carinae of area apicalis high and distinct, at anterior end not curved towards dorsal middle, dorsal margin of the area marked with series of transverse and arcuate striae covering posterior part of the segment, GSR roundly highly elevated, not discoloured. In

fore wing RC=C, R1 short, CV1÷CV2×7, TCV:CV2÷5:3, TCV incurved below middle, angle at base about 90°.

Frons very minutely microcoriaceous and closely superimposed with comparatively large, distinct punctures, PIS=PD, but on top areas of elevations punctures sparse, mesoscutum with plumbeous shine, punctures somewhat smaller and distinctly weaker than on frons, PIS=PD 1-2, but on median area sparser. Propodeum at base just behind the transverse carina smooth, median furrow weakly obliquely striate (variable?), lateral series of striae strong and distinct, on posterior portion extended inwards as series of arcuate striae, area apicalis smooth and polished, sides except femoral sinus very finely, closely punctulate, punctu es posteriorly mixed with oblique feeble striae.

♂, unknown.

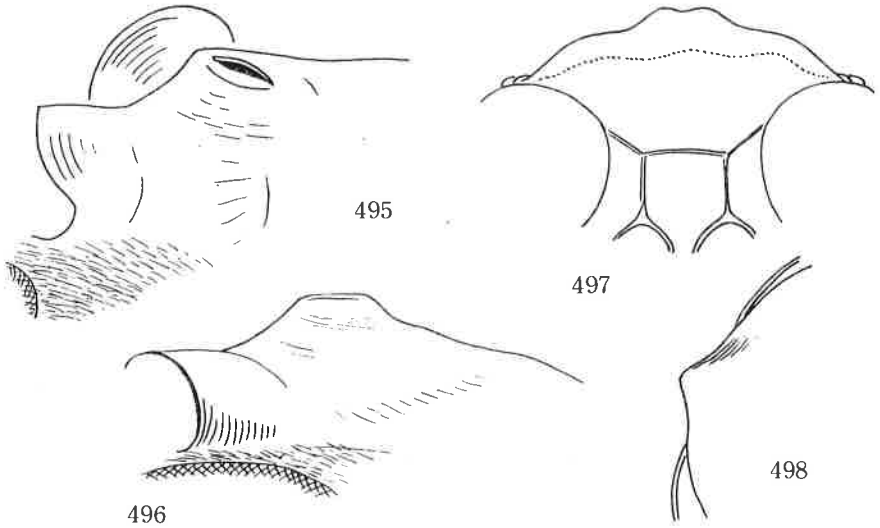
Holotype: ♀, Mindoro, Alcate Vict., 6.IV. 1954, H., M. & D. Townes (AEI).

60. TRYPOXYLON LICIMUM SP. NOV.

Diagnosis. ♀, 10-11 mm. Gl flask-shaped, mesoscutum without microsculpture, propodeum with lateral carinae, IODs=7:6, PAF shallow, down-curved in cross section, clypeus with apical margin bluntly bidentate in middle, area dorsalis distinctly enclosed with furrow, pronotal lamina triangular, strongly produced, gaster medianly reddish, all tarsi except arolia and hind Tl whitish, hair silvery.

Black. Antenna dark brown, Al and 2 at apices pale brown, apical margin of clypeus bright brown, mandible yellow, apically glossy reddish brown, palpi yellow, posterior part of collar discoloured, yellowish, tegula and basal plate of wing also yellow, gaster from apex of Gl to base of G4 reddish, fore tibia wholly, bases of mid and hind tibiae, spurs except brownish longer one of hind leg, tarsi except arolia and hind Tl yellowish white. Hair on clypeus parallel, only at base weakly curved towards medial line.

Head in frontal view with sides rounded, not convergent towards clypeus, vertex not depressed, tops of hind ocelli raised above level of tops of eyes, W:L=100:82, eye incision comparatively broad and shallow and distinctly narrowed towards sinus, dorsal margin horizontal, frons moderately raised, but medial furrow broad and shallow, therefore the elevation is not conspicuous, SAT low tuberiform, with short median carina, carinate area slightly raised, thence smoothly inclined anteriorly and laterally, ASR comparatively broadly expanded anteriorly, surface smooth and polished, PAF shallow, down-curved in cross section, SAT-ASR in dorso-lateral view: Fig. 495, in lateral view: Fig. 496, clypeus: Fig. 497, at base roundly raised, at apex weakly



Figs. 495-498. Trypoxylon licimum sp. nov., ♀

reflected, occipital carina complete, not depressed behind buccal cavity.

HW,HL,IODv,A3,P=100,50,25,22,156. IODs=10:8.5. OOD,Od,POD=1,3,2. A3=AW×3.7. A3,4,5=10,7.5,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,18,7,33(20),40(30). RC=C, close to M, R1 short, but reaching close to wing apex, CV1=CV2×3.7. TCV:CV2≒4:3. Angle nearly 90°.

Dorsum of collar in frontal view roundly raised, weakly tuberculate in middle, lamina on side: Fig. 498, distinctly raised and produced; subalar area of mesopleuron normal; propodeum with distinct lateral carinae, seen from side gently curved, running from near spiracle to near anterior end of lateral carina of area apicalis, lateral furrow of area dorsalis deep and distinct, medial furrow also deeper than usual, GSR roundly elevated, pale brown in colour.

Frons distinctly microceriaceous and closely superimposed with comparatively large punctures, punctures on median and anterior part contiguous to the adjacent ones those on mesoscutum in holotype weak and indistinct, in paratype considerably strong and distinct, always sparse, especially on median area; propodeum with lateral series of striae, also in holotype weak and in paratype strong, but area dorsalis in both at base obliquely and on median and lateral furrows strongly, rather coarsely striate, disc anteriorly sparsely punctured, sides in both weakly obliquely striate and weakly, fairly closely punctured, except antero-ventral femoral sinus.

♂, unknown.

Holotype: ♀, Luzon, Mt. Makiling, C. F. Baker (USNM).

Paratype: 1 ♀, Luzon, Mt. Makiling, 1000 m, 30. IV. 1968, M. D. Delfinado (HPBM).

Remarks. In paratype the head is somewhat crushed and the left side of the mesothorax and propodeum is broken.

61. TRYPOXYLON BANOENSE SP. NOV.

Diagnosis. ♀, 11-12 mm. Gaster medianly red, T1-4 of all legs white, hair silvery, G1 flask-shaped, mesoscutum without microsculpture, propodeum with lateral carinae, area dorsalis distinctly enclosed with furrow, IODs=10:7, SAT elliptic in outline, roundly raised towards medial carina, PAF moderately deep, flat-bottomed, V-shaped in cross section, clypeus rounded out, medio-apical margin subtruncate, RC=M-C.

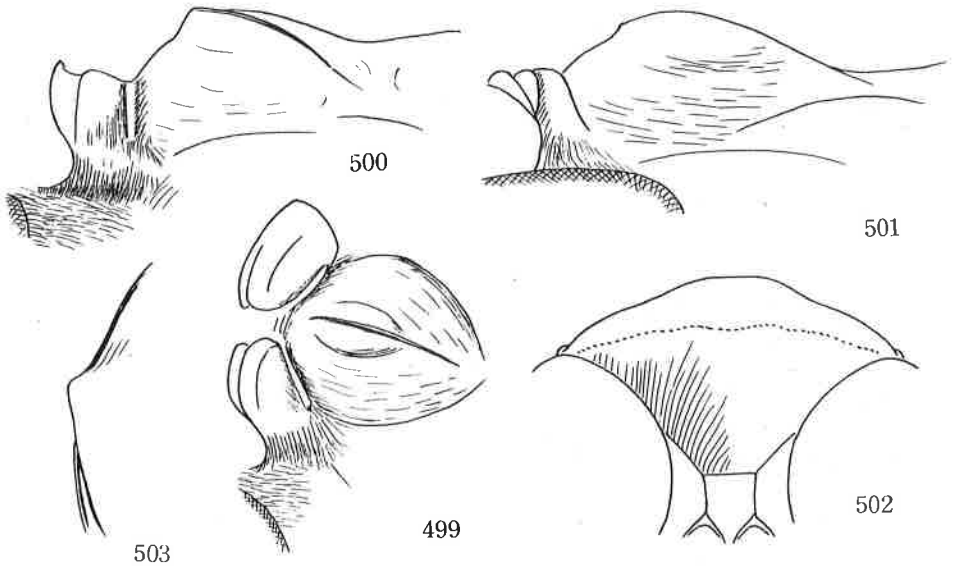
Black; antenna dark brown, not paler beneath, apical glabrous area of clypeus brown, mandible yellow, at base black and apically reddish brown, palpi yellow, posterior part of collar discoloured, tegula and basal plate of wing amber yellow, the latter dark brown posteriorly, gaster from apex of G1 (laterally extended anteriorly) to half of G4 reddish, with a large black mark on G2 and 3. Ground colour of legs dark brown, fore trochanter and femur sometimes slightly pale beneath, fore tibia except folded side and apical area ferruginous, bases of mid and hind tibiae, fore spur yellowish white, T5 of all legs brown, except whitish bases of claws, mid spur slightly and hind spurs considerably brownish. Hair on clypeus at base turned towards medial line.

Head in frontal view with sides roundly and not strongly convergent towards clypeus, vertex slightly depressed, tops of hind ocelli in a line with tops of eyes, W:L =100:85, eye incision somewhat narrow, deep, subparallel-sided, dorsal margin horizontal, frons moderately raised, medial furrow broad and shallow, hence lateral elevations not marked, SAT-ASR in latero-vertical view: Fig. 499, in dorso-lateral view to see through PAF: Fig. 500, in lateral view: Fig. 501, SAT at central area somewhat mound-like, ASR acutely highly carinated at apex and constricted behind it, carina amber-yellow, hind area brown - dark brown and posteriorly black, PAF rather higher at IAA and flatly inclined outwards, at IAA up-curved. Clypeus: Fig. 502, from base till apical reflection medianly roundly raised, apical reflection considerable, occipital carina complete, not incised behind buccal cavity.

HW,HL,IODv,A3,P=100,47,24,23,146. IODs=10:7. OOD,Od,POD=2,7,5. A3≒AW×5. A3,4,5=10,7,6.5. P,Ma,Mi,2(Ma),3(Ma)=100,20,7,34(24),38(30). RC=C but close to M, R1 short, not reaching wing apex, CV1=CV2 × 5-6, TCV:CV2≒5:3, TCV sinuate, angle about 100°.

Collar in frontal view roundly elevated, not tuberculate in middle, seen from above anterior part slightly shorter than posterior part and weakly enlarged laterally, with ends rounded, lamina on side: Fig. 503, considerably raised or reflected at apex, subalar area of mesopleuron normal, propodeum at base with a transverse furrow, margined posteriorly with a carina, lateral carinae distinct, originating from behind

spiracle, but ending far before apex of the segment, directing not to the lateral carina of area apicalis, but to the basal middle of hind coxa. lateral furrows of area dorsalis deep and distinct, lateral carinae of area apicalis anteriorly curved inwards and almost completely enclosing the area, only in middle interrupted narrowly by the extension of medial furrow of posterior inclination, GSR roundly highly raised and discoloured, seen in profile apical area curved posteriorly.



Figs. 499-503. Trypoxylon bancense sp. nov., ♀.

Frons distinctly microcoriaceous and fairly closely covered with compartively large distinct punctures, PIS 1-1.5 times PD, mesoscutum with plumbeous shine, punctures comparatively large, but somewhat smaller and shallower than those on frons and indistinct in outline, PIS 1-1.5 times PD, but on median area sparser, propodeum with distinct lateral series of striae, area dorsalis at base obliquely and shortly, on the furrows and posterior part of disc transversely, strongly striate, rest of disc punctured as on the lateral area of mesoscutum, posterior inclination covered with hair-bearing punctures, but posteriorly transversely striate, area apicalis not smooth and shining, sides shining, but except antero-ventral femoral sinus covered with feeble oblique striae antero-dorsally and with fine weak punctures posteriorly.

♂, unknown.

Holotype: ♀, Luzon, Los Banos, C. F. Baker (USNM).
Paratype: 1 ♀, Los Banos, III. 1917, F. X. Williams (BPBM).

62. TRYPOXYLON GIGANTEUM SP. NOV.

Diagnosis. ♀ 17-20, ♂ 14-15 mm. Gl flask-shaped, mesoscutum shining, finely and sparsely punctured, propodeum with distinct lateral carinae, area dorsalis enclosed with weak furrow, IODs=10:9 (♀ ♂), Al3 >A9-12, gaster black, fore tibia largely ferruginous, fore and mid tarsi brown - dark brown, apically paler, hind T2-5 whitish, hair silvery, RC=C.

♂. Black, clypeus till apex black, mandible yellow, apically reddish brown, posterior part of collar discoloured, yellowish, tegula add basal plate of wing brown, fore and mid tibiae on postero-outer side broadly, hind tibia at base brownish yellow, fore tarsus pale brown, mid tarsus with t1-2 dark- and T3-5 pale-brown, hind tarsus from apex of T1 apically yellowish white, arolia black, fore spur ferruginous, mid and

hind spurs brown or dark brown.

Head in frontal view with sides rounded, vertex considerably depressed, W:L=100:80, eye incision somewhat broad and markedly narrowed towards bottom, dorsal margin slightly inclined outwards, frons considerably highly raised, medial furrow in holotype shallow and weak, in paratype moderately deep, in both shallower anteriorly, SAT low broad nasiform, smoothly very gently inclined towards IAF and PAFs, ASR obliquely weakly raised forwards, PAF wide V-shaped in cross section, in paratype a weak furrow defined at the bottom, the structure in dorso-lateral view to see through PAF: Fig. 504, in lateral view: Fig. 505, in ventro-lateral view: Fig. 506. Clypeus: Fig. 507, medianly from base till apical reflection gently raised, raised area roundly inclined laterally, with hairs at base convergent towards medial line, apical reflection fairly strong, including the total glabrous area; apical part of antenna: Fig. 508, A13 not curved at apex, occipital carina complete, not depressed behind buccal cavity.

HW,HL,IODv,A3,A13,P=100,47,25,16,28,126. IODs=10:9. OOD,Od,POD=3,5,3. A3=AW×2.5. A3,4,5≒10,7,7. A13=BW×3.5, >A9-12 but <A8-12. P,Ma,Mi,2(Ma),3(Ma)=100,22,8,36(25),40(36). RC=C, R1 short, CV1≒CV2×6, TCV:CV2≒3:2, TCV weakly sinuate, angle 120°.

Dorsum of collar subtriangularly gently raised, top rounded, not tuberculate, seen from above anterior part shorter than posterior in middle, but gently enlarged laterally, sides rounded, lamina on side: Figs. 509 (holo), 510 (para), apical area distinctly raised or reflected and produced; subalar area of mesopleuron normal. Propodeum with distinct lateral carinae, carina long, seen in profile curved, with apical end directing towards posterior end of hind coxal base, area dorsalis at base with a transverse furrow, the furrow margined behind with a carina, lateral furrows of the area broad and very feeble, area apicalis dorsally widely open, lateral carinae somewhat curved antero-dorsally, GSR roundly highly raised, brown in colour, in lateral view apical part curved. Eight sternite: Fig. 511, strong convergence towards apex is characteristic.

Genitalia in ventral view: Fig. 512, in lateral view: Fig. 513, apical part of left paramere in dorso-lateral view: Fig. 514, penis valve in dorsal (vertical) view: Fig. 515. Paramere shortly bifid at apex, hairy angle at base of inner expansion of its main body is worth noting (Fig. 512), shoulder of penis valve is not roundly and highly elevated and sickle-shaped appendages are comparatively slender and narrow.

Frons distinctly microcoriaceous and sparsely superimposed with comparatively large distinct punctures, PIS=PD 1-2,SAT also microcoriaceous and more closely punctured, dorsum of ASR iregularly coarsely rugose. Mesoscutum with plumbeous shine, but polished, with very fine and sparse punctures, propodeum with lateral series of striae that are on posterior half well defined and coarse, but anteriorly weaker and indistinct, area dorsalis at base obliquely shortly sparsely and weakly striate, rest of the area without distinct striae, disc sparsely scattered with fine punctures, posterior inclination before area apicalis transversely coarsely striate, mixed with punctures, inside of area apicalis largely smooth and polished, sides scattered with fine hair-bearing points, often mixed with weak rugae, posteriormost area strongly and closely striate.

♀. Larger, similar to ♂ in colouration and in general other characters. Clypeus (Fig. 516) longer, broader, apically broadly subtruncate, at base more strongly raised, sometimes bearing a weak crrina in middle and at apex medianly incrassate and much more broadly (including hairy area) and more strongly reflected, supraclypeal area shorter, more acute triangular in form (Fig. 516), A3 longer. Measurements on one of the Luzon specimens:

Head in frontal view W:L=100:87. HW,HL,IODv,A3,P=100,45,22,25,140. IODs=10:9-9.5. OOD,Od,POD≒2,5,2. A3=AW×4.5. P,Ma,Mi,2(Ma),3(Ma)=100,24,8,37(32),34(40). RC=C, R1 short, CV1≒CV2×6, TCV:CV2≒5:3, angle about 120°.

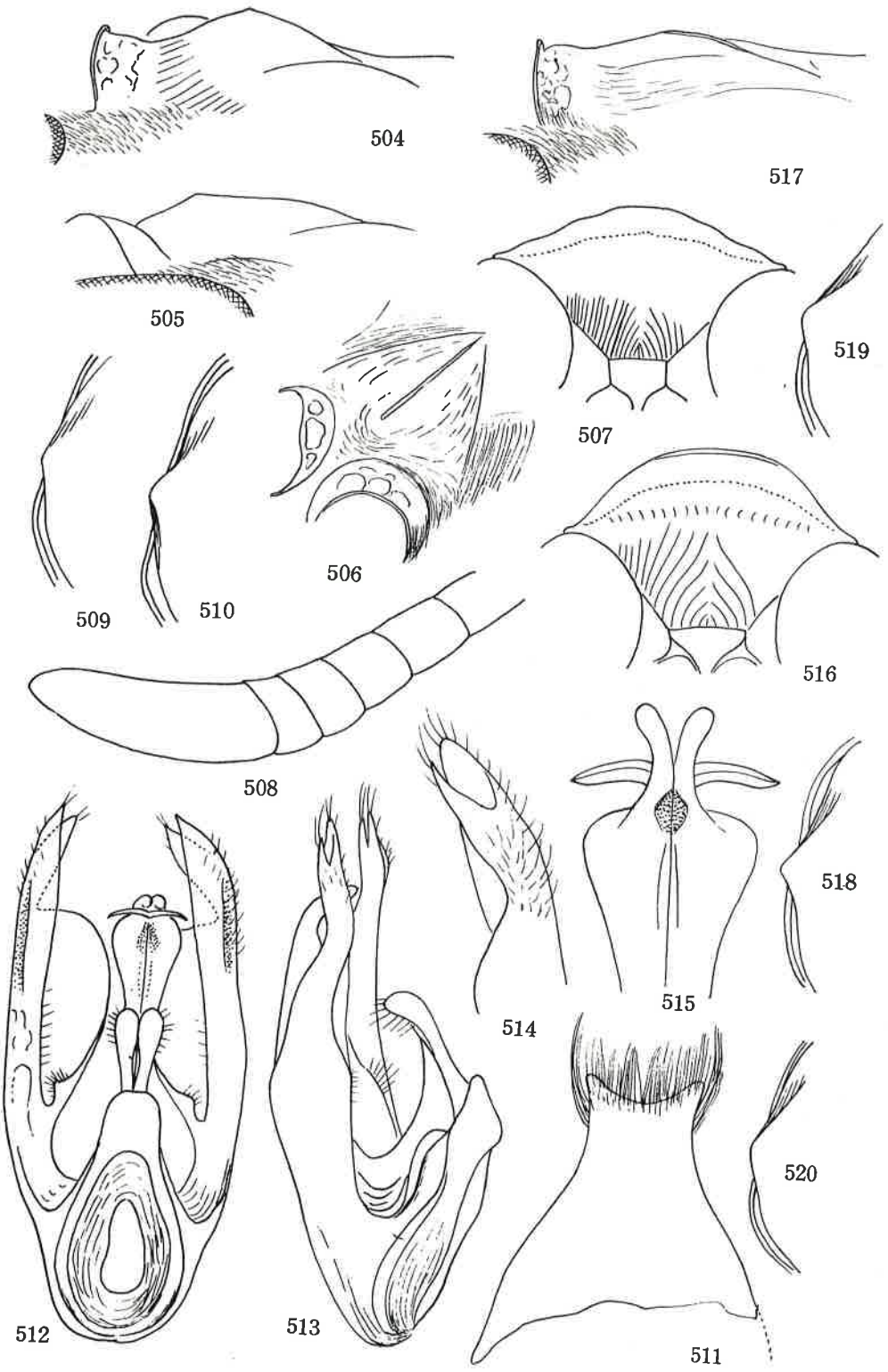
Head seen in front with vertex narrower and more strongly depressed than in ♂, tops of hind ocelli below level of tops of eyes, eye incision slightly narrower than in ♂, subparallel-sided.

Punctuation generally similar.

Holotype: ♂, Is. Samar, - -. C. F. Baker (USNM).

Paratypes: 1 ♂, Mindanao, Surigao, - -, C. F. Baker (USNM — genitalia and 8th sternite examined); 4 ♀, Luzon (2 ♀, Mt. Makiling, C. F. Baker - USNM; 1 ♀, Los Banos, IX. 1917, F. X. Williams -BPBM; 1 ♀, Los Banos, 30. V. 1954, H., M. and D. Townes (AEI). 5 ♀, Samar (all by C. F. Baker - USNM). 2 ♀, Panay (both by C. F. Baker-USNM). 1 ♀, Negros, Mt. Canlaon, 3600 ft, 8. V. 1953, H., M. & D. Townes (AEI). 3 ♀ Mindanao (1 ♀, Butuan, 2 ♀, Dapitan, C. F. Baker - USNM).

Remarks. Variations in characters: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SAT-ASR.

SAT is usually low broad nasiform and connected with ASR by a gentle depression or wide opened V-shaped furrow. In one of the female specimens from Luzon SAT almost flat, only median area weakly raised and nearly flatly connected with ASR (Fig. 517). In the paratype male from Mindanao PAF distinctly forming a furrow, though narrow and shallow and flatly inclined outwards, similar but weaker PAF is also observed rarely in the female, without connection with the locality.

Colour of the legs.

Ferruginous or brown parts of the legs in the female are as in the male, though more or less varied in the darkness of the brownish colouration, but always darker on mid T1 and 2. While in the specimens from Panay (2 ♀) and Negro (1 ♀) fore and mid tibiae and tarsi nearly wholly dark brown, only fore tibia at base somewhat ferruginous and tarsi apically somewhat pale. Possibly it may be the local variation.

Form of pronotal lamina.

Variation in the male was already given (Figs. 509 and 510). In the female also a more or less variation is observed. Generally the lamina is obtuse triangle in form and with apical area distinctly raised or reflected. Most usually it is as in the paratype male (Fig. 510), but sometimes apex somewhat toothed (Fig. 518) or apical reflection stronger (Fig. 519) or weaker (Fig. 520). (In the figures the marginal double lines show the peripheral white or ferruginous area).

Ratio of CV1 to CV2 etc.

CV1 is most usually 5.5–6 times as long as CV2, but sometimes 6.5–7 times so. The value is comparatively constant. Similarly so the sinuation of TCV, ratio of TCV: CV2 and angle formed by them.

63. TRYPOXYLON CURVUM SP. NOV.

Diagnosis. ♂, 11 mm. Gaster black, fore tibia largely and all tarsi except greater part of T1 yellowish white, G1 slender and long, flask-shaped, but apical swelling not strong, but distinctly longer than G2+G3; mesoscutum without microsculpture, subalar area of mesopleuron with pent-roof structure, propodeum with lateral carinae, area dorsalis with lateral furrows, IODs=10:9, Al3=A9–12, SAT thick nasiform, PAF deep, flat-bottomed, apical margin of clypeus nearly rounded, hair silvery.

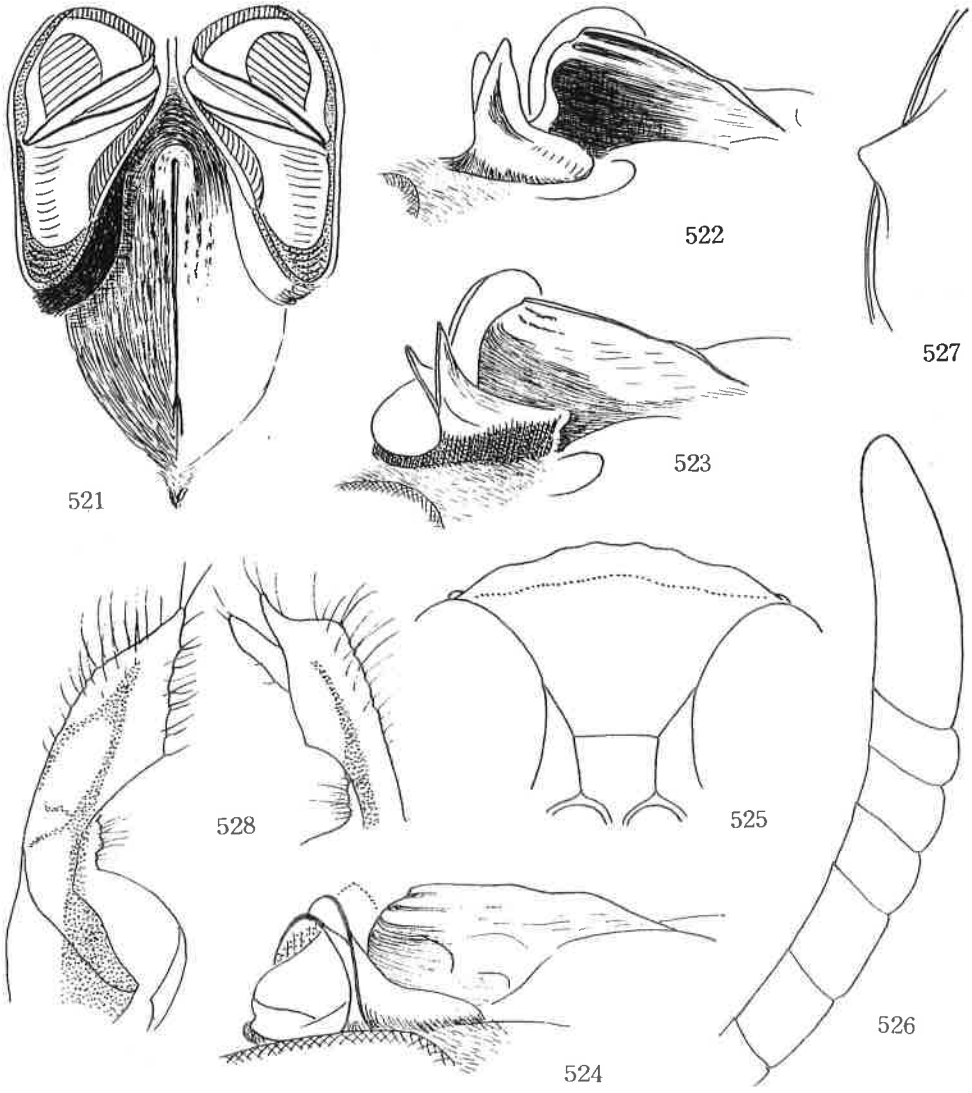
Black, clypeus till apex black, mandible dark brown, apically reddish brown, palpi ochre yellow, posterior part of collar discoloured, tubercle with marginal area brown, tegula and basal plate of wing brown, fore tibia except folded side and apex, fore spur and from apex of T1 to T5 of all legs except arolia yellowish white, rest of T1 dark brown, paler beneath. Hair silvery, on clypeus parallel.

Head in frontal view with lateral margins rounded, slightly convergent towards clypeus, vertex slightly depressed, tops of hind ocelli in a line with tops of eyes, W:L=100:84, eye incision narrow, subparallel-sided, dorsal margin horizontal, frons gently raised, median furrow broad and shallow, SAT moderately high thick nasiform, medio-apical inclination without flat shining area, but medianly bluntly carinate. ASR nearly as high as SAT, short, acutely highly bicarinate on dorsum, at its outer area it extends backwards lowering (Figs. 521–524), PAF very deep, flat-bottomed (strictly very slightly up-curved), narrow U-shaped in cross section (Fig. 522), angle formed by both PAFs at IAA slightly less than 90 (Fig. 521). The structure: Figs. 521 (vertical from back side), 522 (dorso-lateral to see through left PAF), 523 (more lateral), 524 (lateral). Clypeus: Fig. 525, disc at base broadly gently roundly raised and at apex weakly reflected, apical part of antenna: Fig. 526. Occipital carina complete, slightly depressed behind buccal cavity.

HW,HL,IODv,A3,Al3,P=100,50,23,18,30,156. IODs=10:9. OOD,Od,POD=1,5,2. A3=AW×3. A3,4,5=10,6.5,6. Al3=BW×3.3 and =A9–12. P,Ma,Mi,2(Ma),3(Ma)=100,13,5,34(18),36 (25). RC=B, but close to C. R1 moderately long (slightly longer than CV2), reaching close to wing apex, CV1=CV2×5.5, TCV:CV2=3:2, TCV sinuate, angle about 120°.

Collar in frontal view gently triangularly raised towards middle, top minutely rounded, not tuberculate, seen from above anterior part much shorter in middle than posterior, rather narrow ridge-like, weakly enlarged laterally, with anterior margin emarginate, lamina on side: Fig. 527, distinctly toothed. Subalar area of mesopleuron with pent-roof structure, fairly well developed, but not completely so, vertical pit wall that is covered by the roof transversely highly rugoso-carinate, mesopleural scrobe markedly large and deep. Propodeum with weal lateral carinae, in lateral view up-curved, with apex directing to posterior end of hind coxal base, area dorsalis

enclosed with distinct furrow, at base provided with a transverse groove which is margined posteriorly with a highly raised carina, area apicalis with curved lateral carinae, but widely open upwards, GSR roundly highly elevated, apical area pale brown in colour and in lateral view curved. Gl with apical swelling rather gradual, not strongly swollen (cf. measurements), but the anterior parallel-sided stalk part long and as a whole distinctly longer than G 2 and 3 combined (cf. measurements).



Figs. 521-528. Trypoxylon curvum sp. nov., ♂

Genitalia very similar in pattern to those of T. compluvium to which the present species is closely related (cf. Figs. 367-370), but the ventral one of apical bifurcated lobes is distinctly wider (Fig. 528) and the sickle-shaped appendages of penis valve are also wider, otherwise well agree in structure and pubescence. Sternite 8 is also similar (during dissection broken into two pieces, but apical form and lateral curvature well agree with those of compluvium.

Frons distinctly microcoriaceous and closely superimposed with comparatively large well-outlined and flat-bottomed punctures, PIS= or <PD, but on central area of

elevations sparser, mesoscutum with plumbeous shine, closely covered with small, indistinctly outlined shallow punctures, under high magnification (30) PIS bearing faint microreticulation, lateral series of striae of propodeum weakly defined only on the area between the ends of lateral carina of the segment and that of area apicalis, area dorsalis at base crenate, median furrow feebly striate, disc fairly closely covered with comparatively large, indistinctly outlined, but distinct punctures, outside the area and posterior inclination finely and sparsely punctured with hair-bearing points, area apicalis weakly rugose and punctured, not smooth and polished, sides on dorsal half sparsely but distinctly punctured, posteriormost part transversely weakly but closely striate.

♀, unknown.

Holotype: ♂, Mindanao, Kolumbugan, —, C. F. Baker (USNM).

Remarks. The present species is closely related to T. compluvium s. l. and in some view may be placed under the same specific category. But it differs from the compluvium group as a whole (including 4 sspp.) in some important characters and here it is treated as a distinct species. The differences are:

(1) Paramere of genitalia with ventral one of apical two lobes much wider and the sickle-shaped appendages of the penis valve also wider.

(2) SAT much narrower and longer, ASR at outer side extending backwards, letting PAF much more strongly oblique.

(3) Ultimate antennal joint relatively much longer.

(4) RC is rather B-type and R1 moderately long, longer than CV2 (in compluvium RC=C and R1 short, distinctly shorter than CV2).

(5) Lateral carinae of propodeum much weaker, while lateral furrows of area dorsalis much stronger and more distinct.

(6) Mesoscutum practically without microreticulation and surface fairly shining (in compluvium distinctly microcoriaceous and surface nearly mat).

Furthermore, it differs from the group in that apical margin of clypeus is nearly rounded, lateral series of striae of propodeum are largely disappeared, punctures on frons are stronger and distinct, all T1 largely black.

Table 9. Known distribution of the Trypoxylon species in the Philippines

Species \ Loco	Luzon	Mindoro	Busuanga	Palawan	Balabac	Bilirán	Sibuyan	Basbas	Samar	Leyte	Panay	Cebu	Negros	Mindanao	Basilan	Tawi Tawi	Culion	Bagbatan
appendiculatum	0	0	.	.	.	.	.	.	0	0	.	.	.	.	.	.	.	.
apicum	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ashmeadi	0	0	.	.	.	0	0	.	0	0	0	0	0	0	.	.	.	.
auropilosum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	.	.
bakeri	0	.	.	.	.	.	.	.	0	.	.	.	0	0	.	.	.	.
balabacense	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.
banahao	0	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.
banosense	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
basilanense	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	.	.	.
basilanum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.
bicolor	.	.	.	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.
bucidnon	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
buddha	.	0	.	.	.	.	0	.	.	.	.	0	0	.	.	.	.	0
canlaon	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.	.
cidicum	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
compluvium	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
c. minderonis	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
c. panayanum	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.
c. samarianum	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.
culionum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.
curvum	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
errans	0	.	.	.	.	.	.	.	.	0	.	0	.	.	.	.	.	.
flavipes breve	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.
fletcheri baguionis	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
fulvocollare	0	0	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
giganteum	0	.	.	.	.	.	.	.	0	.	0	.	0	0	.	.	.	.
halcon	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
insulare	.	0	.	.	.	.	.	.	0	.	0	.	0	0	.	0	.	.
i. rufomaculatum	0	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
kolambuganum	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
laeviceps	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
lagunaense	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
licimum	0	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
lobatifrons	0	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
luteocollare	0	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
luzonense	0	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.	.
l. nigrum	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
makiling	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
mindanaonis s. str.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0	.	.	.
m. fortius	0	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
palawanum	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
panitianum	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
petiolatum	0	.	0	0	.	.	.	0	.	.	.	.	.	0	0	0	.	.
propinquum	0	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
rekabum	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
rohweriellum	0	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.
rufiventre	0	.	.	0	.	.	.	.	0	.	.	.	0	0	.	0	.	.
samarense	0	.	.	.	.	.	.	0	0	.	.	.	.	0	0	.	.	.
sarum	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
scaposum	.	.	.	.	.	.	.	.	.	.	.	.	0	0	.	.	.	.
schmiedeknechti	0	0	0	0	.	.	.	.	0	0	.	0	0	0	.	.	0	.
semicompluvium	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.
semperi	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
sibuyanense	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.
singaporense surigaonis	.	.	.	.	.	.	.	.	0	.	.	.	.	0	.	.	.	.
striolatum	.	.	0	0	.	0	.	.	0	.	.	.	.	0	0	0	.	.
tadaonis	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
taros	0	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.
tawitawiense	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.
thaianum philippinicum	0	.	0	0	0	.	.	.	0	.	.	.	0	.	.	0	0	.
townesorum	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
trituberculatum	0	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.
varicolor	.	.	.	.	.	.	0	.	0	.	0	0	0	0	0	.	.	.
varipiloides	0	0	.	.	.	.	0	.	0	.	0	.	0	0	0	.	.	.
varipilosum	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
varipunctatum	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
v. kiashi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.
williamsi	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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