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SOLITARY WASPS NEWLY COLLECTED IN THE OGASAWARAS OR THE BONIN ISLAND (HYMENOPTERA)

By K. TSUNEKI

The present paper deals with the specimens of the Sphecidae, Mutillidae and Chrysididae that were collected mainly by Mr. T. Nambu, a member of the Japan Hymenopterists Association, on the island of Chichidzima in the year of 1983, together with some that were collected by one of his friends on Chichidzima and Hahadzima in recent years and sent to me for study.

The material includes 12 species of Sphecidae, 1 species of Mutillidae and 2 species of Chrysididae. As to the Sphecidae 7 species are already recorded from Chichidzima by Y. Haneda in 1973 and the present report has added 9 further species to the island fauna. Of the species dealt with here interesting is the discovery of Mutillidae and the fact that the widely spread common species found among them mostly show the more or less local characters that are worthy of separation at the subspecific level.

Descriptions and records

1. Isodontia boninensis (Tsuneki, 1973)

Sphex (Isodontia) boninensis Tsuneki, Etizenia (Fukui), 65: 1-3, 1973 (♀ ♂, Ogasawara Is. figs.).
Sphex (Isodontia) boninensis: Haneda, Life Study (Fukui), 17(1-2): 30, 1973 (listed).
Isodontia boninensis: Bohart & Menke, World Sphecid., p. 123, 1976 (listed).

Specimen: 1 ♀, Hahadzima (Kirihama), 22.VI.1979, A.Shimizu leg.

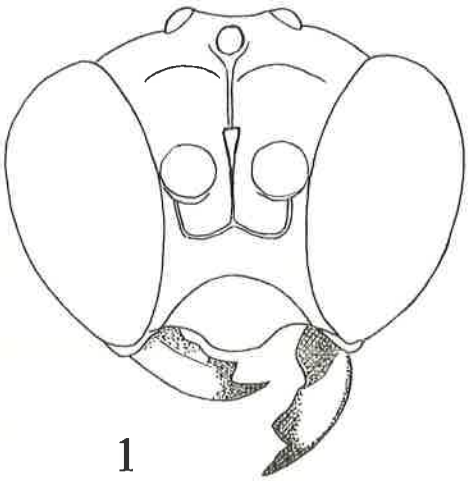
2. Psenulus ogasawaranus sp. nov.

In the key by van Lith (1962) there is no group that can receive the present species. It runs to group of erraticus and runs out, because the male antenna is without tyloidea and the female propodeum is not reticulately sculptured and not densely pubescent.

Main characters: ♀ ♂, 6-7 mm, fore and mid legs largely and hind tibia at base and on apical spurs yellow, body black; interantennal carina very narrowly enlarged dorsally, with fine impressed line in middle, subantennal transverse carina present, notauli deep and distinct, but reaching only a third of scutum from base, postpetiole distinctly swollen, in ♀ pygidial area laterally carinate, dorsally open, in ♂ antennal joints 4-10 subequal in length, each somewhat swollen, but without tyloidea; petiole long, in ♀ as long as hind trochanter and femur combined, in ♂ slightly longer than this, area dorsalis medianly broadly depressed, laterally obliquely striated, rest of propodeum, except rugoso-striate broad bordering area between posterior aspect and sides, largely smooth in ♀, wholly strongly coarsely reticulate in ♂, recurrent veins 1 and 2 of fore wing interstitial or nearly with transverse cubital veins 1 and 2 respectively.

♂, 6.0-6.5 mm. Mandible except inner margin and apex yellow, labrum and mouth parts also yellow, antennal joints each partly brown to dark brown beneath, apically less distinctly so, humeral tubercle narrowly dark brown on posterior margin, tegula translucent brown, anteriorly darkened, coxae black, fore trochanter with a faint brown streak above, femur basally above and till beyond middle beneath dark brown, tibia and tarsus except arolium yellow, mid leg similar, but streak on femur beneath reaching apex, hind tibia from base till about middle yellow, wings hyaline, slightly darkened except base and posterior margin, veins black. Hair on clypeus and supraclypeal area dense, appressed, silvery, on sides of frons somewhat sparse, turned sideways and slightly brassy in colour, on antennal area (within carinae) very sparse, surface well visible, also somewhat brassy, on head, thorax and propodeum above and on their sides moderately long, whitish, but in some light appears coppery, on thorax beneath fairly dense, silvery and on gaster short, not dense, slightly brownish white.

Head seen in front: Fig. 1, W:L=100:76, IODv at anterior margins of hind ocelli



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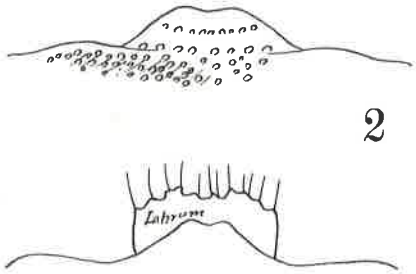

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Figs. 1-3. (1 and 2 ♂, 3 ♀)
Psenulus ogasawaranus sp. nov.

relatively 60, relative length of IOD at vertex, at antennae (minimum) and at clypeus (lower maximum) =60:33:38. Clypeus: Fig. 2, ocelli in low triangle, each completely black, without distinct pupil and measurements difficult, roughly OOD:Od:POD:OCD=10:5:8:9. Antennal flagellum basally somewhat compressed dorso-ventrally, joint 3 in dorsal view with L:W(maximum)=10:5.5 (maximum width slightly before apex, apex distinctly constricted), while in lateral view L:W=10:4, relative length of joints 1,3,4,10, 12,13=8,10,9,9,8,10. Pronotal collar with anterior margin carinate, at lateral corners distinctly angulate and slightly produced, on mesoscutum admedian lines separated, much weaker than notauli and they are equidistantly located, posterior margin acutely edged and prescutellar furrow strongly foveolated. On mesopleuron subalar hollow markedly deep, with postspiracular carina marks its anterior margin, epicnemial and episternal furrows strongly crenate, scrobal furrow present, fine, bordering the roundly raised epimeral area. Recurrent vein 1 usually interstitial with transverse cubital vein 1, sometimes close to it either in cubital cell 1 or 2, recurrent vein 2 usually received by cubital cell 3 close to transverse cubital vein 2, sometimes interstitial with it, the difference is sometimes observed between both wings of the same specimen.

Vertex smooth and polished, with a few fine scattered punctures, frons fairly closely, more finely punctured, but shining, mesoscutum finely and sparsely punctured with PIS polished.

♀. Slightly larger, 6.5–7.0 mm. Similar to ♂ in general, differing mainly in structure of antenna and pygidial area, in the state of hair of antennal area, in the sculpture of propodeum and slightly in colour of legs and in form of clypeus and mandibular tooth.

Antenna. Strongly clavate, apically markedly incrassate, not compressed forso-ventrally, each joint not so markedly swollen medially, relative length to width at base and apex of A3 =10:3.3:4, each joint partly brown beneath.

Clypeus and labrum: Fig. 3, labrum very strange in form, yellow in colour.

Antennal area below antennal sockets densely covered with hair, divergently arising from medial keel and the surface almost invisible.

Fore and mid legs from trochanter apically lemon yellow, without brownish streak, only tarsi apically brownish.

On propodeum area dorsalis similar in structure and striation; bordering area between dorso-posterior aspect and sides moderately largely rugoso-reticulate, thence inwards shortly, obliquely rugulose, mixed with irregular punctures, thence outwards on surface of sides fairly broadly rugoso-striate, anteriorly obliquely and posteriorly transversely so, rest of the segment smooth and polished, with very sparse fine punctures scattered.

Holotype: ♂, Chichidzima, Mt. Chuo-san, 9.VIII.1983, T. Nambu leg. (Coll. Tsune-

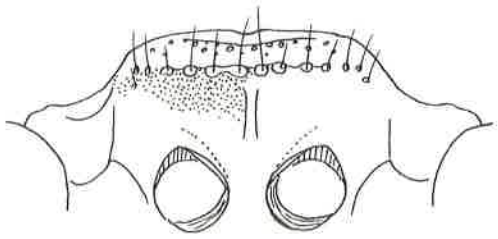
ki).

Paratypes: 1 ♂ 3 ♀, same data; 1 ♂, Hahadzima (Kitakoh), 11.VIII.1983, leg. T. Nambu (Coll. Nambu).

3. LIRIS (LEPTOLARRA) SUBTESSELLATUS OGASAWARAE SSP. NOV.

Liris (Leptolarra) subtessellatus: Tsuneki, SPJHA, 25: 1, 11. 1983 (revision of holotype, list of synonyms and references).

♀ 9.2-13.0, ♂ 8.0-9.0 mm. Characteristic in that the transverse cubital veins 1 and 2 are united at radius or nearly (Table 1) (as in Liris papuensis m.), but punctures on mesoscutum very fine and dense (as in typical subtessellatus) and the hair on clypeus much finer and sparser, with surface punctures well visible. Otherwise except that the colour of wings is less yellowish, as in black-legged form or f. docilis of the typical race.



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♀. HW:IODv=100:19, IODv:A3=10:9. A3=AW×2.3. Clypeus: Fig. 4, CML=CLL×2 bevel broad, sparsely punctured, with shallow medial incision at apex, behind bevel a series of large piliferous punctures present, disc medianly bluntly carinated, surface very finely and closely punctured and sparsely superimposed with some medium-sized punctures. AOD:WAS:IAD=16:10:5. Antenna with rhinaria on A7-11, very small and not distinct, especially on 11.

♂. Structure of fore and hind femora, apical margin of clypeus and genital organs as in f. docilis.

Table 1. Relative length of abscissae of radial vein (when abs. 5 = 5) in Liris subtessellatus ogasawarae ssp. nov.

Left wing						Right wing						
Sex	1	2	3	4	5	Sex	1	2	3	4	5	Is.
♀	21	1	12	22	5	♀	21	0	13	22	5	C.
♀	18	1	10	16	5	♀	18	1	11	18	5	C.
♀	19	0	13	19	5	♀	19	0	12	20	5	C.
♂	18	0	13	21	5	♂	17	0	13	20	5	H.
♂	16	2	10	20	5	♂	15	3	11	19	5	H.
♂	15	3	10	20	5	♂	15	2	9	20	5	C.
♂	15	0	10	20	5	♂	15	1	8	20	5	C.

Remarks. C. Chichidzima, H. Hahadzima.

Holotype: ♀, Chichidzima (Kohshinzuka), 22.VI.1979, A. Shimizu (Coll. Tsuneki).

Paratypes: 1 ♀, Chichidzima (Mikazukiyama), 10.VII.1975, A. Shimizu; 1 ♀, Chichidzima (Ohmura), 17.VII.1976, A. Shimizu; 2 ♂, Chichidzima (Mt. Chuoh), 9, 13.VIII. 1983, T. Nambu; 2 ♂, Hahadzima (Okikoh), 11.VIII.1983, T. Nambu.

4. LIRIS (LEPTOLARRA) FESTINANS (SMITH, 1859)

Liris (Nigliris) japonica: Tsuneki, Etizenia, 20: 34, 1967 (ref. list, redescr., var. figs.).

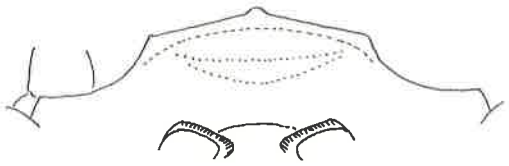
Liris (Leptolarra) festinans: Tsuneki, SPJHA, 25: 20, 1983 (list of syn., main ref.).

Specimens examined:

7 ♀ 12 ♂, Chichidzima (Mt. Chuoh), 9, 13.VIII.1983, T. Nambu.

5. TACHYSPHEX TINCTIPENNIS TITIDZIMAENSIS SSP. NOV.

♂. Similar to typical tinctipennis in the characters of fore tarsal rake hair, in the coarse striae of propodeal sides, in the structure of clypeus (CML:CLL etc.) and genitalia (especially penis valve) and in the colour of mandible, but differs slightly from it in that body is generally somewhat smaller (5.0–7.0 mm, mostly 5.5–6.0 mm) and antennal joints apically finer.



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♀. In the colour of mandible, in the strong and coarse striae of propodeal sides similar to tinctipennis, but in the colour of fore tarsal rake bristles and in the averaged body size nearer to puncticeps, in the characters of propodeal hair similar to both.

In the form of apical margin of clypeus in the females of the Chichidzima specimens of this species are very constant (Fig. 5), though this is considerably variable in the Philippine specimens of the same species.

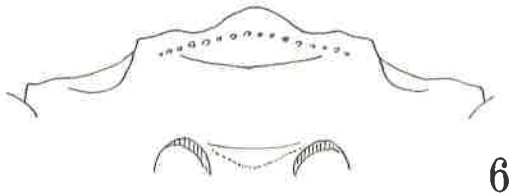
Holotype: ♂, Chichidzima (Mt. Chuoh), 9.VIII.1983, T. Nambu (Coll. Tsuneki).
Paratypes: 11 ♀ 25 ♂, same as above, T. Nambu (Coll. Nambu).

6. TACHYSPEX NIGRICOLOR (DALLA TORRE, 1897)

Tachysphex nigricolor: Tsuneki, APJHA, 24: 67, 1983 (list of ref. syn.)

Specimen examined:

1 ♀, Hahadzima (Mt. Kensen, slope) 24.VI.1979, A. Shimizu.



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Differs from the Japanese typical specimens in that the reddish ferruginous mark on mandible is smaller and each joint of antennal flagellum is relatively very slightly longer. But the differences are so slight that the specimen is retained within the category of the typical species.

Apical margin of clypeus in the female: Fig. 6.

7. PISON (PISON) PUNCTIFRONS SHUCKARD, 1837

Pison punctifrons: Tsuneki, SPJHA, 24: 86, 1983 (list of ref.).

Specimens examined:

1 ♀ 1 ♂, Chichidzima (Nakanodaira), 10.VIII.1983, T. Nambu.

8. PISON (PISON) ARGENTATUM HANEDAI TSUNEKI, 1973 (stat. nov.)

Pison hanedai Tsuneki, Etizenia (Fukui), 65: 17, 1973 (♂, Chichidzima Is.).
Pison argentatum: Tsuneki, SPJHA, 24: 89, 1983 (list of ref.).

Specimens examined: 2 ♀, Chichidzima (Mt. Mikazuki), 10.VI.1975, A. Shimizu.

Remarks. In the female specimens of hanedai apical margin of clypeus is dis-

tinctly depressed as in ignavum and in the male medio-apical tooth-shaped prominence is somewhat longer and more acute than in typical race.

9. PISON (PISON) HAHADZIMAENSE SP. NOV.

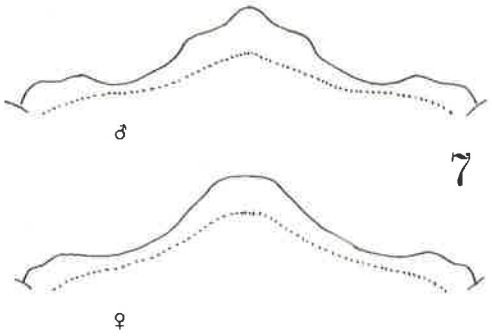
Closely resembles in general characters the group of irridipenne-korrorense, but the short erect hair on head above is black as in esakii-nigellum group.

♀ 7.0, ♂ 6.3-6.5 mm. Black, apical two thirds of mandible reddish brown, tegula brown, paler outwards, wings fairly strongly brownish in ♀, less strongly so in ♂, venation similar in both sexes, recurrent vein 2 interstitial with transverse cubital vein 2, forming apical vein of the petiolated triangular cell, frontal furrow shallow and indistinct, but apically with a shining bottom line and at verge to interantennal area shortly, longitudinally carinate, pronotal collar medianly raised and reflected, top of the reflected area about half the width of lateral depressed areas, on mesoscutum interspace of admedian lines smaller than the distance from them to notauli, posterior margin sparsely foveate or crenate, scutellum medianly shallowly furrowed, propodeum with lateral carinae, not reaching spiracles, area dorsalis vaguely margined with feeble furrow, apical depression of gastral tergites and gentle swelling in front of it at mid lateral areas as usual.

Frontal sculpture. ♀, frons microgranulate and superimposed with fine punctures as in irridipenne; ♂, frons microgranulate and dull, without superimposed puncture (only along inner orbits microsculpture weaker and scattered with fine points).

Mesothoracal punctation. ♀ ♂, on scutum punctures fine, close, PIS 0.5-1 times PD, PIS microcoriaceous, on scutellum similar, but punctures smaller, on pleuron punctures slightly larger, but on epimeral area and posteriorly smaller, with PIS microcoriaceous and mostly 1-2 times PD, partly 0.5 times so.

Surface state of propodeum. ♀ ♂, basal transverse furrow coarsely foveate, striae between foveae shortly extended on to disc, median broad furrow thoroughly carinate in middle, disc and sides covered rather uniformly with punctures as large as those on scutum, with PIS 1-2 times PD and without microsculpture, shining, on disc punctures piliferous, obliquely (divergent posteriorly) confluent, giving rise to short rugulae between puncture-series, with the hair reversely inclined obliquely forwards.



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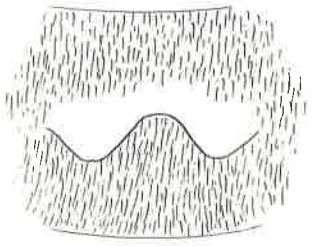

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Clypeus. Apical margin of the median produced part is short pentagonal in outline in ♂ (Fig. 7), broadly rounded and subtruncate in ♀ (Fig. 8).

Interocular distance. HW:IODv=100:16(♀), =100:24(♂). IODv:IODi:IODc=10:45:24 (♀), =10:40:16(♂).

Antenna. When A3=10, relative length of A3:4:5=10:8:8(♀), =10:8:7.5(♂). A3=AW× 2.7(♀♂).

Ocelli. Forming a triangle, distinctly higher than equilateral one, hind ocelli almost contiguous to inner orbits in ♀ (so-called pupil is slightly separated, but the raised marginal black is almost contiguous), while distinctly separated from them in ♂. Measured at pupil margin OOD:Od:POD=1:6:3(♀), =3:6:4(♂). (The orbital margin meant here is the innermost fine impressed line of the narrow marginal black zone, not the apparent eye margin of the bright part including facets).

Mammiform tubercles of sternite 3 of gaster: Fig. 9 (in ♂).

Holotype: ♂, Hahadzima Is. (Hyogidaira), 23.VI.1979, A. Shimizu (Coll. Tsuneki).
Paratypes: 1 ♀ 1 ♂, same data.

10. TRYPOXYLON CHICHIDZIMAENSE TSUNEKI, 1973

Trypoxylon chichidzimaense Tsuneki, Etizenia (Fukui), 65: 12, 1973 (♀, Chichidzima).
Trypoxylon chichidzimaense: Bohart & Menke, World Sphecid., p. 345, 1976 (listed).
Trypoxylon chichidzimaense: Tsuneki, SPJHA, 14: 52, 1981 (♀, redescr., figs.).
Trypoxylon chichidzimaense: Tsuneki, Ibid., 17: 82, 1981 (♀, do.).

Specimens examined:
1 ♀, Chichidzima (Mt. Mikazuki), 10.VII.1975, A. Shimizu; 9 ♂, Hahadzima (Ohtani), 12.VIII.1983, T. Nambu.

Description of ♂ Length 7.5–9.5 mm. Black, with plumbeous shine on thorax and propodeum; mandible bright ferruginous, apically dark brown, on inner margin castaneous, palpi yellow, but basal joints darkened, tegula translucent pale brown, tibial spurs and tarsi apically brownish, especially marked on fore leg, wings feebly clouded and apically distinctly darkened.

Similar to ♀ in general structure, differing in the sexual characters as follows:

Clypeus: Fig. 10. Antenna simple, relative length of A1–5=9,5,10,8,8, A4–8 subequal in length, A1=AW×1.6, A3=AW×2.2, A10 slightly longer than wide, 11 as long as wide, 12 shorter than wide and 13=BW×2.3(lateral) or =BW×3(dorsal). Occipital carina complete, but far separated from buccal carina. SAT (supraantennal tubercle) generally similar to ♀, but somewhat more rounded, with median shining carina enlarged at top of SAT, ending in a minute pit just above SAT, ASR (antennal socket rim) broad, thin, sublamellate, PAF (postantennal furrow) roundly concave in cross section, HW: IODv=100:28, IODv:IODi:IODc=10:28:9, OOD:Od:POD:OCD=3:5:4:12. Pronotum in frontal view gently roundly raised and minutely, weakly tuberculate in middle, lamina on side triangularly produced and acutely pointed at apex, ante-coxal tubercle broadly brimmed at base, rounded in outline, shortly raised, flat on top and densely covered with long pubescence, fore coxa on outer margin acutely carinate and also covered with


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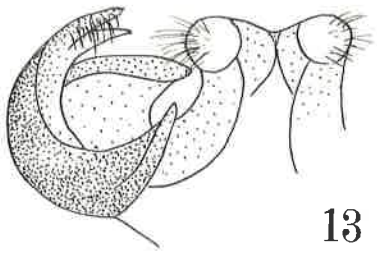
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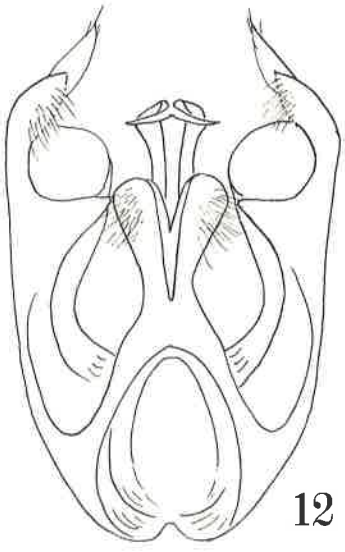
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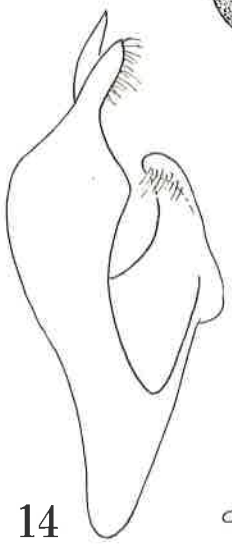
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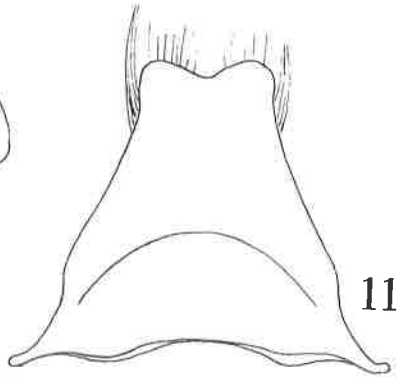
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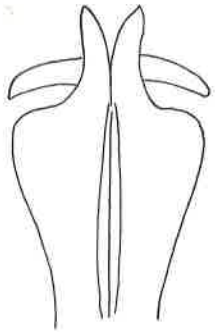
long pubescence; mesoscutum without median furrow, parapsidal suture in a long impressed line, gently outcurved; propodeum with weak lateral carinae, anteriorly weaker and sometimes becomes indistinct, accompanied with crenate shallow furrow inside, apparently separated from the latero-apical carinae which are strong and distinct and curved inwards dorsally, area dorsalis enclosed with weak fine furrow, median furrow broad and deep, with a crenate bottom line in middle that is gradually broadened apically; gastral petiole flask-shaped, relative length to HW or to its maximum width considerably variable, usually greater than HW, sometimes as great as HW, usually about 5 times as long as wide at maximum, but sometimes 3.7-4.0 times so; radial cell of fore wing long, M-type.



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The 8th sternite in dorsal (inner) view: Fig. 11; genitalia in ventral view: Fig. 12, right half of them in apical (from ventral side) view: Fig. 13, in which it becomes clear that preapical pouch-like structure of the paramere is not completely closed at inner side, paramere bifid at apex (Fig. 14, lateral view), ventral one of apical two lobes covered with hair on ventral surface, volsella with apical enlarged area also covered with hair, penis valve in dorsal view: Fig. 15.

Frons distinctly microcoriaceous and superimposed with medium-sized punctures, PIS mostly 0.5-1 times PD, on vertex microsculpture more minute and weak, with punctures somewhat finer and the surface more shining than on frons; mesoscutum apparently smooth and polished, but under high magnification (80×) delicately microreticulate and somewhat sparsely covered with medium-sized shallow punctures, PIS mostly as large as PD, but on central area even 2-3 times so, scutellum and mesopleuron without microsculpture, finely, somewhat sparsely punctured, PIS 1-3 time PD, metapleuron polished without puncture; propodeum on dorsal and posterior aspects shining, finely, weakly and sparsely punctured, on sides more distinctly but sparsely (PIS mostly 1.5-2 times PD) punctured, except smooth antero-ventral femoral sinus; gaster rather sparsely covered with very fine piliferous points.

Remarks. According to the genitalial structure the present species belongs to major group III of the genus (ref. Tsuneki, 1981, SPJHA 18), to the group vardyi and to the subgroup wherein the ventral one of apical lobes of paramere has a simple (or not granulate) area covered with hair. The fact shows that its nearset ally is Trypoxylon hollisi, known from Sarawak, Borneo. External characters are also closely similar to those of the members of the group, especially in regard to the structure of SAT-ASR.

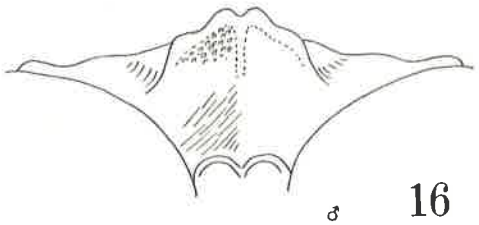
11. LESTICA (SOLENIUS) RUFIGASTER SP. NOV.

The present species is characteristic in having the largely red gaster and can easily be separated from the known species.

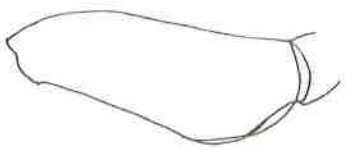
♂, length 6.0 mm. Black, propodeum completely mat, gastral segments 1-4 pale brownish red, without maculae, orange yellow are A1 completely and A2 at apex, pronotal collar and tubercles (with transparent minute window in middle), scutellum except basal area, postscutellum (intervalic furrow black), apices of coxae (in hind one slightly larger) and of trochanters (in hind one narrower), fore and mid femora except large basal marks above and on sides, fore and mid tibiae except brownish streak on inner side, fore T1 largely and mid T1 at base; rest of fore and mid tarsi brown, paler beneath, hind one dark brown; wings slightly brownish, anterior darker, veins black. Hair on clypeus silvery.

Head seen from above with width at eye and occipital carina and length at eye and in middle relatively 100, 66, 72, 58. OOD,Od,POD,OCD=20,9,21,36 (measured at the pupil); supraorbital fovea acutely margined, long, anteriorly attenuate, originating from about the level of posterior margin of fore ocellus, running along inner orbit reaching near verge to anterior frons, about as long as POD; A1 ecarinate, relative length of A1-6 and 12 =25,6,6,5,5,5,10, A3=AW×1.3. Clypeus: Fig. 16, mandible bidentate at apex; occipital carina strong, reaching close to buccal carina, but not contiguous to it, at apex running shortly parallel to the side of quadrate buccal carina and gradually lowering to end. Pronotal collar short, nearly flatly raised anteri-

orly, with apex acutely carinate, carina and disc incised by a furrow in middle and produced in a tooth at each lateral corner, ante-coxal tubercle of prosternum strongly toothed; on mesopleuron postspiracular-epicnemial carinae in a line, but acetabular carina lacking, precoxal carina curved and at dorsal top shortly toothed and at ventral end turned forwards, reaching the lower end of epicnemial carina; propodeum with posterior inclination flat, with acute lateral carinae, the carinae on dorsal aspect continuous to the lateralmost ones of coarse reticulation; gastral tergites 2, 3, 4 and 5 at base transversely, strongly and at apex before marginal carina weakly depressed and in lateral view distinctly constricted at base, but in dorsal view without constriction anywhere, tergite 7 with pygidial area, margined laterally with blunt carinae, medianly furrowed and apical middle shallowly incised, surface coarsely co-



♂ 16



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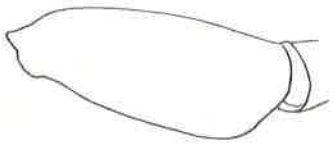

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♀ 19

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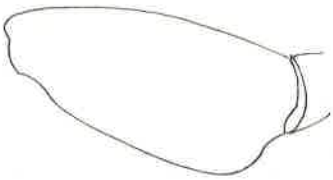

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vered with large, longitudinally lengthened punctures. Fore femur strongly incrassate, at base flattened beneath, outer margin of flattened area acutely edged and carinate, but without spine, in posterior view: Fig. 17, mid femur also incrassate: Fig. 18, fore and mid tibiae normal, slender and long, noteworthy is that mid tibia with a short but distinct spur, as long as A11; hind tibia gently excavated on outer side before apex and apex markedly reflected, surface strongly spinose, each spine supported by a thickly raised basal tubercle. In fore wing abscissa 1 of radius about half the length of 2.

Reticulate punctures on upper frons medium-sized, on vertex slightly finer as usual, those on mesoscutum much larger, longitudinally elongate and partly confluent, giving rise to irregular longitudinal shining striae between them, espeically marked on broad central area, on scutellum and postscutellum punctures weaker and striae much stronger and closer, but less distinct due to yellow colouration. Episternal furrow of mesopleuron coarsely crenate, crenae extended on to prepectus as longitudinal carinae, carinae longer upwards and mixed with others, reaching postspiracular carina and scattered sparsely with strong punctures, epimeral area longitudinally, closely striate, but below scrobe striae almost absent (in some light feeble striae partly seen) and strongly irregularly punctured, PIS 2-4 times PD dorsally, but ventrally mostly as large as PD, metapleuron longitudinally strongly striate. Propodeum at base transversely broadly, and medianly longitudinally more broadly furrowed, basal furrow longitudinally coarsely striate, striae together with hind marginal carina forming a series of coarse meshes, median furrow extended posteriorly, turning into that of posterior inclination, it is medianly longitudinally carinate till above middle of the inclination and on both sides coarsely but shallowly foveate as in basal transverse fur-

row, outsides of the furrow of dorsal aspect irregularly and coarsely reticulate, flat posterior aspect obliquely, more finely and weakly rugoso-striate and reticulate, side longitudinally, strongly striate, with weaker, finer striae in between; gastral tergites uniformly, closely covered with medium-sized punctures, punctures gradually smaller on posterior segments, on tergite 1 slightly smaller than those on frons, but slightly larger than on vertex, sternite 2 and 3 somewhat sparsely scattered with large strong punctures.

♀, 8.0 mm. Colouration similar to that of ♂, but fore femur above more broadly and mid knee and base of tibia black and all tarsi wholly brown to dark brown; structure and punctation also similar, differences:

Head from above thicker, with temples better developed, width at eyes and occipital carina and length at eye and in middle relatively 100:74:73:62, supraorbital foveae longer than POD (5:3), this is due to that ocelli are relatively larger (OOD:Od: POD:OCD=20:13:18:44), apical margin of clypeus slightly different in form (Fig. 19), mandible tridentate at apex, with inner (or anterior) tooth far retreated and with an additional short blunt tooth on inner margin near middle, flagellar joints of antenna relatively shorter, relative length of A1-6,12=25,6,5,4.5,4.5,4.3,8. A3=AW×1.3. Precoxal carina of mesopleuron with dorsal tooth more obtuse and ventral extention forward much weaker and less distinct, basal furrow of propodeum without carina on posterior margin, hence striae longitudinally, somewhat obliquely extended posteriorly, without forming reticulation, only near sides weakly reticulate, rugosed striae on flat posterior aspect finer, closer and weaker, longitudinal striae on sides also finer and closer; pygidial area long gutterwise extended as usual in ♀, with basal triangular area covered with medium-sized punctures, fore and mid femora in posterior view: Figs. 20 and 21.

Holotype: ♂, Hahadzima (Kirihama), 22.VI.1979, A. Shimizu leg. (Coll. Tsuneki).
Paratypes: 1 ♂, same as holotype (Coll. Shimizu); 1 ♀, Hahadzima (Kakanodaira), 10.VIII.1983, T. Nambu leg. (Coll. Nambu).

12. BEMBECINUS ANTHRACINUS OGASAWARAENSIS TSUNEKI, 1970

Bembecinus anthracinus ogasawaraensis Tsuneki, Etizenia (Fukui), 47: 1-7, 1970 (♀ ♂, Chichidzima and Hahadzima, variations).
Bembecinus anthracinus ogasawaraensis: Haneda, Life Study (Fukui), 17(1-2): 30, 1973 (40 ♂ 24 ♀, Chichidzima).
Bembecinus anthracinus ogasawaraensis: Bohart & Menke, World Sphecid., p. 530, 1976 (listed).

Specimens examined:
1 ♀ 1 ♂, Hahadzima, 11, 12.VIII.1983, T. Nambu leg.

13. TROGASPIDIA PUSTULATA (SMITH, 1873)

Trogaspidia pustulata: Tsuneki, Etizenia, 61: 13, 1972 (Syn. ref. distr. comments).

Specimens examined:

3 ♂, Chichidzima (Mt. Mikazuki), 10.VII.1975, A. Shimizu leg.

Remarks. The specimens above listed are characteristic in having the gastral segments largely or wholly black. Such form as this is very scarce among the specimens from the four main islands of Japan, appearing in about 10 % or less. Therefore, the fact mentioned above seems to show the distinct inclination towards the melanism in the specimens of this species occurring in the Ogasawaras.

14. CHRYSIS (CHRYSIS) NOHIRAI TSUNEKI, 1952

Chrysis (Pentachrysis) saraksensis: Tosawa (nec Radoszkovsky), Trans. Kansai Ent. Soc. 2: 36, 1931 (1 ♀, Chichidzima).
Chrysis (Tetrachrysis) saraksensis: Tosawa, Ibid., 2: 48, 1931 (♀, nat. col. pl. re-

descr. in Jap.).
Chrysis (Tetrachrysis) saraksensis: Uchida, Cat. Jap. Ins., II: 4, 1934 (listed).
Chrysis (Tetrachrysis) saraksensis: Yasumatsu, Trans. Nat. Hist. Soc. Formosa, 27 (157): 362, 1936 (listed).
Chrysis (Tetrachrysis) nohirai Tsuneki, Ins. Mats. (Sapporo), 18(1-2): 31, 1952 (♀, Chichidzima, 2.V.1918, leg. A. Nohira)(figs. dorsal view, antenna).
Chrysis (Chrysis) nohirai: Tsuneki, Life Study, 14(2): 48, 1970 (keyed).

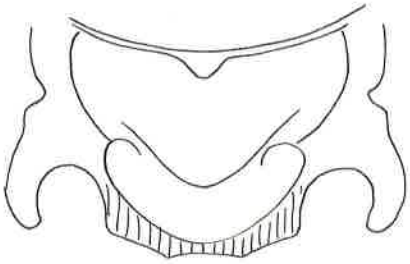
Specimen examined:

1 ♀, Chichidzima (Mt. Mikazuki), 8.VII.1975, A. Shimizu.

15. CHRYSIS (CHRYSIS) BONINENSIS SP. NOV.

♀. 5.5-6.0 mm. Characteristic in that antenna is till A5 metallic blue, A3 1.5 times as long as A4, scutellum nearly flat, latero-apical teeth of propodeum long, curved in and downwards and the hair on head, thorax and gaster above black.

Metallic blue green; two marks on collar and sides of pronotum, sides of thorax irregularly and lateral parts of apical margins of gastral tergites 1 and 2 golden, sometimes medial lobe of clypeus above also golden. Hair on head, thorax, propodeum and gastral tergite 3 long and sparse, on tergite 1 and 2 above short and dense. Wings slightly clouded throughout, veins black or brown.



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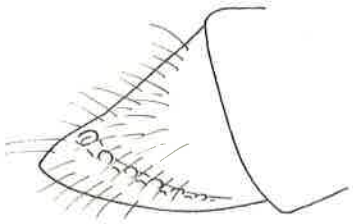

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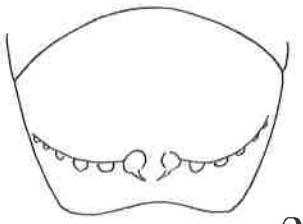

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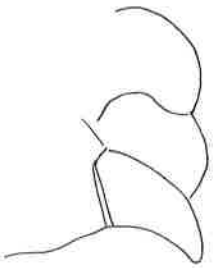

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Head seen from above with W:L=100:52, with anterior and posterior margins parallel to each other, both curved out anteriorly, anterior margin minutely incised in middle, relative width at posterior margins of eyes and at occipital carina 84:76, relative eye length and temple length 42:10; IOD across middle of hind ocelli and at anterior verge of upper frons relatively 62:51; OOD:Od:POD:OCD=16:8:14:16, scapal basin without dorsal carina, smooth area broader above and below and medianly narrowed by the expansion of punctured area; clypeus with apical margin rounded out, medianly broadly, roundly and highly raised; seen in front relative length of eye and gena 42:14, width of eye relatively 23, genae fairly strongly roundly convergent below, A3 2.5 times as long as wide at apex, A4 1.3 times so. Pronotum slightly less than as wide as head, with lateral margins ecarinate, but strongly sinuate, notauli complete

and deep, parapsidal sutures comparatively long, incurved, scutellum very gently raised, nearly flat, metanotum not raised dorsally, in the same level with thorax, at base in middle minutely depressed, metanotum-propodeum complex seen from above: Fig. 22, latero-apical tooth (left) in lateral view: Fig. 23; gaster slightly broader than head, relative width at apical margin of segment 1, across middle of 2 and at base of 3, when HW=100, =104,106,96, tergite 1 weakly trisulcate at base on vertical area, tergite 2 without medial carina, latero-posterior corner angulated (in Fig. 26), tergite 3 in dorsal view: Fig. 24, in posterior view: Fig. 25, in lateral view: Fig. 26, anteapical series of foveae 6 on each side, partly confluent.

Body above reticulate-punctate, punctures slightly larger on median lobe of mesoscutum posteriorly, on scutellum and central part of metanotum medium-sized and slightly smaller on gaster, sides of propodeum on anterior and posterior hollows smooth and polished, medianly above transversely striate, below finely and closely punctured.

♂, unknown.

Holotype: ♀, Chichidzima (Mt. Mikazuki), 12.VII.1975, A. Shimizu leg. (Coll. Tsuneki).

Paratype: 1 ♀, same data (Coll. Shimizu).

General remarks

The species of Sphecidae that are known to occur in the Ogasawaras and not included in the present material are as follows:

1. Chalybion bengalense (Dahlbom, 1845)
2. Pison tosawai Yasumatsu, 1935
3. Pison oakleyi boninense Tsuneki, 1973
4. Trypoxylon petiolatum Smith, 1857

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A B B R E V I A T I O N

Al,2	.....	Antennal joint 1, 2 ....
ACD	.....	Antenno-clypeal distance
AOD	.....	Antenno-ocular distance
AW	.....	Apical width
BW	.....	Basal width
Gl,2	.....	Gastral segment 1, 2 ...
GSl,2	.....	Gastral sternite 1, 2 ...
GTl,2	.....	Gastral tergite 1, 2 ...
HL	.....	Head length
HW	.....	Head width
IAD	.....	Interantennal distance
IODc	.....	Interocular distance at clypeus
IODm	.....	Interocular distance at middle
IODv	.....	Interocular distance at vertx
OCD	.....	Ocelloccipital distance
Od	.....	Ocellar diameter
OOD	.....	Ocellocular distance
PD	.....	Puncture diameter
PIS	.....	Puncture-interspace
POD	.....	Postocellar distance
Tl,2	.....	Tarsal joint 1, 2 ...
WAS	.....	Width of antennal socket
CLL	.....	Clypeal lateral lobe (width)
CML	.....	Clypeal medial lobe (width)
IODi	.....	Interocular distance at eye incision