SPECIES OF THE EAST ASIAN *BIFASCIATUS* GROUP IN THE GENUS *TRICHIUS* FABRICIUS (COLEOPTERA, CETONIIDAE)

by

J. KRIKKEN
Rijksmuseum van Natuurlijke Historie, Leiden

With 32 text-figures and 5 plates

This paper is dedicated to Professor Dr. L. D. Brongersma, retiring Director of the Rijksmuseum van Natuurlijke Historie, Leiden

ABSTRACT

The East Asian *Trichius bifasciatus* group is diagnosed and discussed. An illustrated key to the seven known species is given. *T. versutus* spec. nov. from North Vietnam is described. Further observations concern: *T. elegans* var. *taiheisanus* Kano stat. nov.; *T. bowringi* Thomson (= *T. mandarinus* Redtenbacher syn. nov.); *T. cupreipes* Bourgoin (= *T. uraiensis* Kano syn. nov., *Gnorimus formosanus* Niijima & Kinoshita syn. nov.); *T. fraterculus fraterculus* Moser stat. nov., *T. f. duporti* Bourgoin stat. nov.; *T. lagopus* Fairmaire (= *T. ferriei* Pouillaude syn. nov.). For two names lectotypes are designated.

There is considerable confusion over the classification of beetles commonly referred to *Trichius* Fabricius. The Far East section of this genus is evidently composite, whilst moreover *Trichius*-like beetles have incorrectly or questionably been assigned to *Gnorimus* Lepeletier & Serville.

Roughly speaking, Asian *Trichius* sensu lato may be divided into at least six or seven fairly distinct species-groups. Genus-group names are available for three or four of these, viz., *Trichius* Fabricius (1787: 25; type-species: *Scarabaeus fasciatus* L.), *Paratrichius* Janson (1881: 610; type-species: *Paratrichius longicornis* Janson, junior synonym of *Trichius doenitzi* Harold) and *Lasiotrichius* Reitter (1899: 83; type-species: *Scarabaeus succinctus* Pallas). I suspect *Pseudagenius* Heller (1923: 78, one described species: *P. testaceipennis* Heller; unique specimen not yet located) merits only a subgeneric position within *Trichius*. Further species-groups are exemplified by such species as *Gnorimus flavitarsis* Fairmaire, *Trichius costatus* (Janson) and *T. bifasciatus* Moser.

The last-mentioned species constitutes with six others the species-group dealt with here. Two of these species have been mixed up, one of them remained unnamed so far. The present study is intended to anticipate a synopsis of the Asian Trichiinae; substantially it is an annotated key corroborated by comparative illustrations, which are likely to be more useful than lengthy descriptions.

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Trichius bifasciatus group

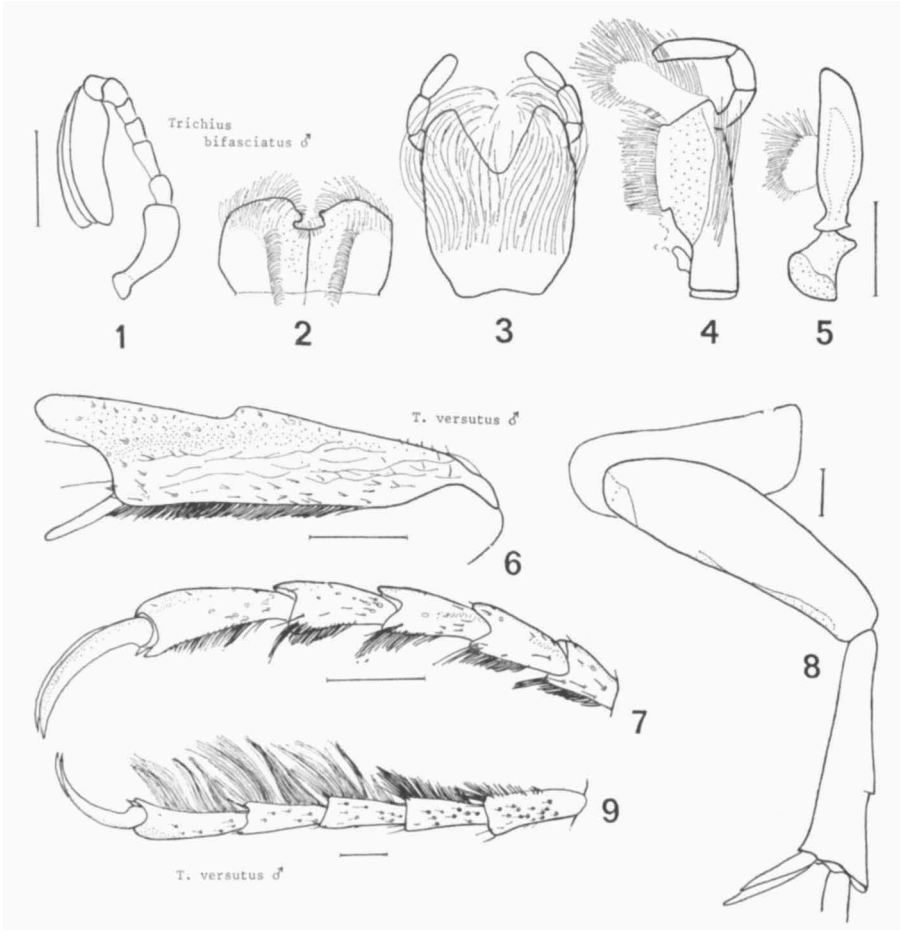
Diagnosis. — Inferior side of hind tarsal segments in males, and in females of some species, with fringe of setae, which on segments 3-5 of certain species is replaced by very conspicuous fringe of long, whitish hairs (fig. 9). Pygidum as well as underside of body lacking any cretaceous cover, furnished with conspicuous whitish pilosity (fig. 34, etc.). Fore tibia in both sexes with long terminal spur, anteapical denticle absent or obsolescent in the males (fig. 6); middle and hind tibiae (fig. 8) straight, or nearly so (note that in the male sex this character differentiates Eurasian *Trichius*-like beetles from *Gnorimus* Lep. & Serv.); apart from the usual two spurs, apex of middle tibia lacking particular extensions. Tarsal segments not modified, all cylindrical to club-shaped (figs. 7, 9).

Antenna (fig. 1) 10-segmented, including 3-lamellate club; dimensions of lamellae similar in both sexes. Mouthparts, figs. 2-5. Pattern of elytral stria obsolete; lateral declivity of elytra separated from discal surface by longitudinal costa (less distinct in the *fraterculus* subgroup); elytra with well-defined yellow or orange markings (usually 2-5 on each, not reaching elytral apex) against darker (black, brown, cupreous, green) background. Head and pronotum devoid of complex colour patterns, rather uniformly black, brown, cupreous or green. Parameral structure (figs. 26-32) simple. Entire build remarkably slender (figs. 33, 34, etc.); length 1.5-2.5 cm.

Affinities. — Although their resemblance is primarily due to similar elytral colour patterns, members of the *bifasciatus* group may still be quite closely affined to *Trichius fasciatus* (L.) and its relatives, more particularly to *T. succinctus* (Pallas). This species shares several characters with *T. lagopus* Fairmaire, which is one of the reasons why I have refrained from assigning to the *bifasciatus* group a subgeneric status. *T. succinctus*, etc.,

however, lack the conspicuous fringe of setae on the hind tarsi, and certain other characters mentioned above implicitly distinguish those *Trichius* from *bifasciatus* group species as well. Species of *Paratrichius* Janson and other *Trichius*-like beetles of Asia are quite different, and cannot possibly be confounded with *bifasciatus* group species. The relations with certain African and American genera, e.g. *Trichiotinus* Casey, await clarification.

Species delimitation and arrangement. —Within the *Trichius bifasciatus* group the following characters appeared to be most important. Shape of



Figs. 1-5. Antenna and mouthparts of *Trichius bifasciatus* Moser, ♂, Mauson Mts. 1, right antenna; 2, labium; 3, mentum; 4, maxilla; 5, mandibula.

Figs. 6-9. Legs of *T. versutus* spec. nov., ♂, paratype, Mauson Mts. 6, right fore tibia and 7, tarsus; 8, right hind leg and 9, tarsus. 1-5, 8-9, ventral view; 6-7, dorsal view. Scale-lines = 1 mm.

clypeus, pronotum, pygidium (particularly in the females), and male genitalia. Distribution, density, length, and insertion of setae on clypeo-frons, pronotum, pygidium and hind tarsal segments. Colours and colour pattern of dorsal side (particularly the elytra). Sculpture of clypeofrons, pronotum and elytra.

Among these characters the following, more or less correlated trends are prominent. Increasing fragmentation of yellow or orange markings on elytra (compare extremes on plate 2). Increasing acumination and divergence of parameral tips (figs. 26-32). Increasing degree of sexual dimorphism (dorsal colours, clypeal and pygidial shape, pygidial pilosity, etc.).

Considering these points the *bifasciatus* group can be divided into three subgroups and seven species, which may be arranged as follows. The *elegans* subgroup, with *T. elegans* Kano only; the *bifasciatus* subgroup, including *T. bowringi* Thomson, *bifasciatus* Moser and *cupreipes* Bourgoin; and the *fraterculus* subgroup, including *T. fraterculus* Moser, *versutus* spec. nov. and *lagopus* Fairmaire.

Distribution. — Eastern Asia; from Vietnam to north China, and on islands off the Chinese coast, apparently not north of the Ryukyu Islands.

Bionomics. — Unknown.

Key to the species of the *bifasciatus* group

1. Males, anteapical denticle of fore tibia obsolescent or completely absent . . 2
— Females, anteapical denticle of fore tibia distinct. (Female of *T. lagopus* unknown.) 9
2. Dorsum shiny green (occasionally cupreous or dark brown?), except for yellow-orange markings on elytra (usually five on each). Clypeal margins raised, anterior border of clypeus bisinuate (fig. 10). Shape of pronotum, fig. 18. Head and pronotal disc (lateral view) densely setose, setae brownish, erect, rather short; integument of head and pronotum closely punctate to punctate-rugulate. Pygidium less steeply declivous compared to the following species; centre with two paramedian tufts of white setae, base and centre polished, very shiny, distal surface setose (fig. 36). Parameres, fig. 26. Length 18.5-20.5 mm. — Taiwan . . *elegans* Kano
— Dorsum not shiny green, cupreous or dark brown. Shape of pronotum different. Pygidium steeply declivous. Other characters not combined as mentioned above 3
3. Dorsum dull green, except for yellow-orange patches on elytra (usually five on each). Apart from sublateral patch, whitish pilosity of pronotum concentrated along margins (fig. 19, 41). Pygidium, except for central part, clothed with dense subappressed whitish pilosity (fig. 42). Clypeus (fig. 11) shallowly emarginate in front, anterior margin raised; surface of head longitudinally punctulate-striolate. Parameres, fig. 27. Length 15-18 mm. — China . . . . . *bowringi* Thomson
— Only pronotum and head may be dull green; if so, see first alternative of next couplet. Elytra usually with less than five yellow-orange markings on each elytron 4
4. Anterior border of clypeus only slightly bisinuate, margin distinctly raised (figs. 12-13). Pygidium, except for central part, densely clothed with white, subappressed setae (figs. 46, 50). Elytral colours dull; elytral disc lacking slightly raised,

virtually smooth, sparsely punctate longitudinal zones. Length of hairs on inferior side of tarsal segments less than twice segmental width. Postero-lateral angles of pronotum (seen from above) obtuse (figs. 17, 20-21). Parameres tapering to outwardly directed point (figs. 28-29). Elytral markings frequently fragmented, 2-4 on each elytron 5

— Anterior border of clypeus deeply emarginate in the middle, margin not raised (figs. 14-16). Pygidium centrally with two (or four) paramedian tufts of white subappressed setae (these tufts are poorly pronounced in *T. lagopus*) (fig. 54, etc.). Elytral integument partly shiny (at least the yellow-orange markings). Length of hairs fringing inferior side of tarsal segments 3-5 of hind legs considerably (two or three times) exceeding segmental width (fig. 9). Parameres not tapering to outwardly directed point (figs. 30-32). Elytra usually with two transverse yellow-orange markings, anterior one may extend onto parascutellar surface (e.g. fig. 39) 6

5. Pronotal pilosity whitish, concentrated on margins and small spot on each side of pronotal disc (figs. 20-45); integument inconspicuously, finely transversely striolate (fig. 20, inset). Frons, vertex, pronotum and scutellum green, tibiae shiny black. Length 17-21 mm. — North Vietnam . . . . . *bifasciatus* Moser

— Head and pronotum with dense brownish pilosity (lateral view), lacking sublateral concentrations; pronotal integument distinctly punctate-rugulate (fig. 21, inset). Head, pronotum and scutellum cupreous or green; tibiae and tarsi shiny black or cupreous. Length 16-19 mm. — Taiwan . . . . . *cupreipes* Bourgoin

6. Postero-lateral angles of pronotum (seen from above) not produced (fig. 17). Second and third non-striolate, shallow, longitudinal elevations of elytral disc obsolete. Process between middle coxae shallow, not visible in lateral view. Pygidium with pair of distinct paramedian patches of white setae. Pronotal pilosity dense, not interrupted baso-medially, sublateral concentrations lacking. Length 18-20 mm. — North Vietnam . . . . . *versutus* spec. nov.

— Postero-lateral angles of pronotum (seen from above) distinctly produced (fig. 17, left). Elytral disc with three such longitudinal elevations (juxtasutural one included). Process between middle coxae strongly raised, visible in lateral view. Pilosity of pronotum interrupted baso-medially 7

7. Pronotum and head (lateral view) densely setose. Colour pattern of elytra, fig. 39. Anterior half of elytral disc with numerous long, brown, erect setae, length of several of them exceeding half the scutellar width. Paramedian concentrations of white setae on pygidium vague or absent (fig. 39). Pronotal sculpture fine (compare fig. 24, inset, with 22, inset). Small slender species. Length 17 mm. — Ryukyu Islands . . . . . *lagopus* Fairmaire

— Pronotal disc and head glabrous or very sparsely setose; pronotum with pair of (occasionally abraded) sublateral patches of whitish setae (figs. 22, 53). Colour pattern of elytra different (fig. 53). Anterior half of elytral disc at most with sparse, very short setae. Narrow median stripe of pronotum impunctate (fig. 22, plus inset), remaining surface relatively coarsely, densely punctate, marginally punctate-regulate. Paramedian tufts of setae on pygidium well-defined. Robust species 8

8. Head and pronotum black. Length 21-21.5 mm. — Northern North Vietnam . . . . . *fraterculus fraterculus* Moser

— Head and pronotum metallic, greenish or cupreous. Length 19-22 mm. — Southern North Vietnam . . . . . *fraterculus duporti* Bourgoin

9. Dorsum either shiny green or shiny cupreous to dark brown (var. *taiheisanus* Kano), except for yellow-orange patches on elytra (usually five on each). Shape of pronotum like in the male, fig. 18. Pygidium with pair of small isolated paramedian tufts of white setae, fig. 38. Head and pronotum (lateral view) densely setose, the latter lacking sublateral patches of whitish setae. Hind tarsal fringe of setae absent. Distal

impression of pygidium distinct (seen from above). Length 19.5-20 mm. — Taiwan . . . . . *elegans* Kano

— Dorsum not shiny green, dark brown or cupreous. Shape of pronotum different. Other characters not combined as mentioned above 10

10. Dorsum dull brown, except for yellow-orange patches on elytra (usually five on each). Pygidial shape and pattern of pilosity, fig. 44. Serried parts of pilosity on sternites completely covering integument. Pronotum with pair of sublateral patches of whitish setae (fig. 43). Hind tarsal fringe of setae absent. Distal impression of pygidium distinct (seen from above). Length 16-18 mm. — China *bowringi* Thomson

— Elytra black, usually with two transverse, in certain species fragmented yellow-orange markings on each; if apical surface brown, pilosity of pronotum and other characters different from *bowringi* females 11

11. Inferior side of hind tarsal segments 3-5 with conspicuous fringe of long whitish setae, as in the males (fig. 9). Elytral integument partly (at least the yellow-orange markings) shiny. Pygidial patches of white setae isolated (fig. 56, etc.). Distal impression of pygidium indistinct or absent (dorsal view) . . . 13

— Females lacking conspicuous fringe of long whitish setae on hind tarsi. Elytral integument dull, disc lacking seta-bearing punctures. Pygidial paramedian patches of white setae not isolated, reaching pygidial base (figs. 48, 52). Postero-lateral angles of pronotum obtuse (fig. 17, right, etc.). Distal impression of pygidium (dorsal view) distinct 12

12. Head (lateral view) inconspicuously setose; pronotal pilosity whitish, very dense marginally, plus a small, distinct spot on each side of disc (fig. 55). Length 17-20 mm. — North Vietnam . . . . . *bifasciatus* Moser

— Head (lateral view) densely setose; pronotal pilosity brownish, not forming pair of sublateral concentration. Pronotal surface transversely punctate-rugulate. Elytral surface may be brown distally, behind the yellow-orange markings. Tibiae and tarsi either black or more or less cupreous. Length 18-20 mm. — Taiwan . . . . . *cupreipes* Bourgoin

13. Characters as in first alternative of couplet 6. Shape of pygidial apex (fig. 60) characteristic. Length 18.5 mm. — North Vietnam . . . *versutus* spec. nov.

— Characters as in second alternative of couplet 6. Shape of pygidial apex different (fig. 56) 14

14. Head and pronotum black. Length 20-20.5 mm. — Northern North Vietnam . . . . . *fraterculus fraterculus* Moser

— Head and pronotum metallic, greenish or cupreous. Length 19-23 mm. — Southern North Vietnam . . . . . *fraterculus duporti* Bourgoin

Trichius elegans Kano (figs. 10, 18, 26, 35-38)

elegans Kano, 1931, Annot. zool. Jap., 13: 127, fig. 1 (♂, type-loc. 'Taiheizan').
elegans var. *taiheisanus* Kano, 1931: 128, fig. 2 (separate species, ♀ [non ♂ !], type-loc. 'Taiheisan'), **stat. nov.**

Note. — The dorsal side of *T. elegans* may be either green or cupreous to dark brown, at least in the female sex. Kano described a cupreous female as a separate species, *T. taiheisanus,* which is here considered a mere variety of his *T. elegans,* which was based on a green male. In my view, the name *taiheisanus* for such a distinct variety should not be suppressed (I am, however, not an advovate of naming varieties).

Distribution. — Taiwan.

Material examined. — 2 males, 3 females.

Two males received from T. Nakane, one from Taiwan, leg. T. Kano, the other without data; also from Nakane, two cupreous females without data. One green female from Kuyten collection: Taiwan: Puli.

Trichius bowringi Thomson (figs. 12, 19, 27, 41-44)

bowringii J. Thomson, 1857, Arch. ent., 1: 118 (♂ ♀, type-loc. 'Schang-Haï'). — *mandarinus* Redtenbacher, 1867: 82, pl. 3 fig. 7 (♂, type-loc. 'Vom nordlichen China'), **syn. nov.**

Notes. — The variety mentioned in Thomson's original is probably only the female sex. *T. mandarinus* Redtenbacher completely fits the diagnostic features of *T. bowringi*, and henceforth is a junior synonym; judged from the labels in the BM collection, Arrow came to the same conclusion. I have maintained the current spelling.

Distribution. — China. Although the type-locality remains the only precise information available, this species is probably widely distributed in mainland China.

Material examined. — 6 males, 3 females.

In L and the BM males and females from China, obtained through several private collections (Bourgoin, Van de Poll, Rolle, Valck Lucassen, Janson and Parry), partly leg. R. Fortune; two specimens with locality detailed: Sjanghai (1 ♂, L; 1 ♀, BM).

Trichius bifasciatus Moser (figs. 1-5, 12, 17, 20, 28, 33-34, 45-48)

bifasciatus Moser, 1902, Berl. ent. Zeitschr., 46: 532 (♂ ♀, type-loc. 'Montes Mauson'). Bourgoin, 1915: 177 (in key). Miwa, 1931: 301 (records: Taiwan). Paulian, 1961: 16 (in key), 17, figs. 343, 344, 346. — *vuilleti* Bourgoin, 1916: 298 (♀, type-loc. 'Chapa'). Arrow, 1941: 77 (syn., wrongly inserted under 'Africa').

Notes. — Head and pronotum of *T. bifasciatus* females are green, cupreous or dark brown to black. Miwa recorded *T. bifasciatus* from Taiwan, whilst under this name material from the same island is occasionally offered for sale. I suspect these records to pertain to *T. cupreipes* Bourgoin.

Distribution. — North Vietnam. Like other species recorded from the Mauson Mountains this species may be expected to occur in southern China as well.

Material examined. — 31 males, 25 females.

North Vietnam: Mauson Mountains, iv-v, leg. H. Fruhstorfer, 2-3000 ft, data on several labels incomplete (17 ♂, 8 ♀, L; 6 ♂, 8 ♀, BM); Than-Moi

[SW of Langson], vi-vii, leg. H. Fruhstorfer (2 ♀, L); Chapa, v.1916, leg. R. Vitalis (1 ♀, holotype of *T. vuilleti* Bourgoin, BM); same locality, 11, 12-v, 5, 9, 16, 20, 21, 22, 24.vi and 1.vii.1918, leg. Jeanvoine (one specimen each day, total 6 ♂, 4 ♀, L); v-vii.1918 (1 ♂, BM); Chapa, without date (1 ♀, L); no locality details (1 ♂, 1 ♀, L).

Trichius cupreipes Bourgoin (figs. 13, 21, 29, 49-52)

cupreipes Bourgoin, 1915, Bull. Soc. ent. France, 1915: 175 (♂ ♀, type-loc. 'Formose'). Miwa, 1931: 301 (records). — *formosanus* Niijima & Kinoshita, 1923: 326 (*Gnorimus*, ♀, type-loc. 'Formosa'), pl. 1 fig. 14; **syn. nov.** — *uraiensis* Kano, 1931: 130, fig. 3 (♂, type-loc. 'Urai'), **syn. nov.**

Notes. — In the female sex the differences with the preceding species are slight, particularly since the colour of tibiae, tarsi, and distal surface of the elytra varies from cupreous brown to black. In the males the tibiae and tarsi are neither always cupreous, and *T. uraiensis* Kano is apparently a male with black, scarcely metallic tibiae and tarsi. Nakane sent me such *T. cupreipes* which he had compared with Kano's type in the Tokyo museum; he considers (1971, in litt.) *uraiensis* a junior synonym of *bifasciatus* Moser instead of *cupreipes*. Undoubtedly *Gnorimus formosanus* Niijima & Kinoshita is another junior synonym, which Nakane (1971, in litt.) also assigns to *bifasciatus*. These synonymies are evidenced by the characters mentioned in the key.

Distribution. — Taiwan.

Material examined. — 11 males, 4 females.

Taiwan: Kosempo, 1912 (1 ♂, lectotype, here designated, BM; 1 ♀, L), v.1912 (1 ♀, paralectotype, BM), leg. H. Sauter; Puli, 28.vii.1957 (1 ♂, Kuyten coll.), v.1961 (1 ♂, Kuyten coll.), no date (1 ♂, L; 2 ♂, Kuyten coll.); Sokutsu (Banshoryu distr.), 22.vi.1912, leg. H. Sauter (1 ♂, L); Taipei env.: Yang-ming Shan, 25.v.1965, leg. K. Morimoto (1 ♀, Nakane coll.), 26.vi.1965, leg. T. Nakane (1 ♂, Nakane coll.); Wushai, v.1961 (3 ♂, Kuyten coll.); no precise locality (1 ♀, BM, ex Bowring 1863; 1 ♀, L, ex Valck Lucassen ex Clermont ex Vitalis de Salvaza).

Trichius fraterculus subsp. **fraterculus** Moser stat. nov.

(figs. 14, 17, 22, 30, 53-56)

fraterculus Moser, 1902, Berl. ent. Zeitschr., 46: 533 (♂ [♀ of different sp.], type-loc. 'Montes Mauson'). Paulian, 1961: 16 (in key), 22.

Notes. — After comparing the material of the *bifasciatus* group in the Leiden museum with the original description of *T. fraterculus* I concluded that under that name two species had been mixed up. Two diagnostic ob-

servations in Moser's description clearly show that his female sex belongs to another species, *T. versutus* spec. nov., described below. In order to avoid confusion a male from Moser's collection should be designated lectotype.

T. fraterculus is here regarded as consisting of two subspecies, *T. f. fraterculus* from north of the Red River, and *T. f. duporti* Bourgoin, known from one locality south of this river. Head and pronotum of the former are black, those of *f. duporti* metallic; certain other differences exist but need verification as soon as more material becomes available, since a further reduction of *duporti* seems likely. Possibly Bourgoin would not have described his *duporti* (the type is a female!) if Moser had not combined sexes of different species.

The illustrations of *fraterculus* in this paper were made after specimens belonging to the nominate subspecies.

Distribution. — Northern North Vietnam.

Material examined. — 3 males, 3 females.

North Vietnam: Mauson Mountains, iv-v, leg. H. Fruhstorfer, 2-3000 ft (2 ♂, 3 ♀, L); 1 ♂ from Janson-Valck Lucassen coll., labelled "V. Reusen", "from Max Treute" (L).

Trichius fraterculus subsp. **duporti** Bourgoin stat. nov.

duporti Bourgoin, 1913, Bull. Soc. ent. France, 1913: 230 (separate species, ♀, type-loc. 'Chapa'). Paulian, 1961: 16 (in key), 17.

Note. — Schenkling (1922) failed to include this name in his catalogue.

Material examined. — 5 males, 4 females.

North Vietnam: Chapa, leg. L. Duport (1 ♀, holotype, BM), 15, 16, 18, 19, 27.vi, 2, 3.vii and 11.viii.1918, leg. Jeanvoine (one specimen each day, total 5 ♂, 3 ♀, L).

Trichius versutus spec. nov. (figs. 6-9, 15, 23, 25, 31, 57-60)

fraterculus Moser, 1902: 533 (♀ [not conspecific with *fraterculus* ♂]).

Holotype, male. — Approximate length 19 mm, width 9 mm, height 7 mm. Black, transverse markings on elytra orange, tarsi brownish; dorsal side moderately shiny, ventral side and legs very shiny; pilosity brownish dorsally and on the legs, whitish ventrally, on pygidium and on hind tarsal segments 3-5. Habitus, fig. 57.

Anterior border of clypeus emarginate in the middle, lateral lobes rounded. Except for finely punctate marginal zone of clypeus, almost entire cephalic surface longitudinally punctate-rugulate with numerous suberect setae;

lateral declivities of clypeus longitudinally striolate; eye-canthi with a series of fine punctures only. Maximum length of head 4.05 mm, maximum width 4.00 mm, ratio l/w 1.00.

Antero-lateral angles of pronotum (dorsal view) obtuse, postero-lateral angles ditto; margins of pronotum slightly raised, except postero-laterally. Lateral surface of pronotum transversely punctate-rugulate, remainder closely punctate, locally transversely confluent; most separately discernable units with coarse, suberect brownish seta; punctures distinct, anteriorly well defined, posteriorly less so; diameters of punctures in centre of pronotum 0.05-0.10 mm, their densities 60-80/sq. mm. Median length of pronotum 5.1 mm, maximum width 5.7 mm; ratio l/w 0.90.

Each elytron with two transverse orange markings (fig. 57); black parts of elytra obliquely, on lateral declivity partly transversely striolate; orange markings non-striolate; entire elytral surface with scattered setae, anterior ones suberect, half as long as scutellar width, their densities 10-15/sq. mm. Distance from scutellar apex to imaginary line connecting elytral apices 8.2 mm; maximum length of left elytron 9.7 mm, maximum width of elytra combined 8.4 mm; ratio l/w 1.13.

Most of pectus and abdominal sternites densely striolate-setose, setae sparse or absent on anterior part of mesosternum, metepimeron, anal sternite and small, symmetrically situated parts of remaining sternites; anal sternite with sinuate posterior border. Pygidium (fig. 58) with paramedian concentrations of white setae, apical surface with numerous, most inconspicuous setae; entire pygidium with concentric, braided striolation; propygidium clothed with long subappressed setae, covering basal margin of pygidium.

Anteapical denticle of fore tibia poorly pronounced, superior side of tibia braidedly striolate, external margin with several, small hemipunctures pilosity sparse; inferior side with similar striolation and pilosity; internal edge with fringe of relatively short, densely arranged, obliquely inserted setae; faint ridge limiting internal border of tarsal socket with a series of long setae; terminal spur well-developed, acuminate, extending slightly beyond tarsal segment 1. Superior side of tarsal segments with small, mostly seta-bearing hemipunctures; lateral and inferior sides with exceedingly fine, superficial, longitudinal grooves; segment 1 inferiorly with apical tuft of setae; segments 3-4 with geminate fringe of setae, their length increasing distad; segment 5 with geminate series of fine, short setae. Inferior side of femur striolate-hemipunctate, superior side similarly sculptured but moreover densely setose. Fore coxa striolate-setose.

Middle and hind tibiae with external elevation at about one-third from apex; terminal spurs scarcely tapering, their tips rounded; superior spurs

extending slightly beyond tarsal segment 1, inferiors shorter. Surface of middle tibia closely hemipunctate-striolate, almost each puncture or striola seta-bearing, setae of interior-superior surface relatively long; several of these longer setae serially arranged, their length and number increasing distad. Surface of hind tibia closely hemipunctate, associated pilosity like on middle tibia, setae on internal side longer but not serially arranged; apical crest with several long coarse setae. Middle and hind coxae, and underside of middle and hind femora striolate-setose.

Segments of middle and hind tarsi with small, partly seta-bearing hemipunctures; inferior side of middle tibial segments 1-4 with tuft of obliquely inserted setae, their length increasing distad; inferior side of segment 5 distally with fringe of fine, relatively short setae. Inferior side of hind tarsal segment 1 with apical tuft of long setae, inferior side of segments 2-4 with apico-internal tuft; inferior side of segments 2-5 moreover with internal fringe of long setae, length of these on segment 2 increasing distad to about twice segmental width; setae of internal fringes on segments 3-5 about thrice segmental width.

Allotype, female. — Approximate length 18.5 mm, width 8.5 mm, height 6 mm. Habitus, fig. 59.

Sexual dimorphism poorly pronounced, description of male almost entirely applicable to allotype. Abdominal sternites medially, over about one-third of their width, with short, semi-erect, sparse, whitish setae; lateral surface with dense, longer, subappressed whitish pilosity. Shape of pygidial apex (fig. 60) most characteristic; pygidial hair-tufts smaller.

Anteapical denticle of fore tibia distinct (fig. 59). Setae on internal side of middle tibiae not serially arranged. Fore and middle tarsi lacking conspicuous tufts and fringes of setae.

Variation. — Length 18-20 mm. Sculpture and pilosity of certain parts very different among the specimens at hand; structural features and colours scarcely variant.

Diagnostic remarks. — *Trichius versutus* may be identifiable from the following combination of characters. Postero-lateral angles of pronotum (seen from above) simply angulate, neither produced nor rounded. Each elytron with two entire transverse orange or yellow markings which are shiny, non-striolate; black parts, except along suture, densely striolate throughout; anterior half of elytra with numerous long erect to semi-erect setae. Pygidium with well-defined paramedian concentrations of white setae; pygidial apex of female rectangulate. Pilosity of pronotum not interrupted baso-medially, not forming distinct sublateral patches. Parameral apices truncate. Anterior border of clypeus deeply emarginate in the middle,

margin not raised. Length of hairs fringing inferior side of hind tarsal segments 3-5 considerably exceeding segmental width (in both sexes). Most of pilosity on underside or abdomen serried, completely covering integument. Integument of head and pronotum black.

Material examined. — 4 males, 1 female.

Holotype labelled "Tonkin/Mtes Mauson//Rolle", "♂", "Trichius/fraterculus/Moser", from F. T. Valck Lucassen collection. Allotype and three male paratypes from the same mountains, iv-v, leg. H. Fruhstorfer, 2-3000 ft (all L, one male to be deposited in BM); approx. location of Mauson Mountains 21°51'N 106°60'E.

Note. — Moser referred the female sex of *T. versutus* to his *fraterculus* (see also notes under that species), as shown clearly by his remarks on the "zwei Längsrippen auf jeder Flügeldecke" with the male and the "rechteckige Fortsatz" of the pygidium with the female.

Trichius lagopus Fairmaire (figs. 16, 24, 32, 39-40)

lagopus Fairmaire, 1897, Bull. Soc. ent. France, 1897: 166 ([♂], type-loc. 'île d'Oshima'). — *ferriei* Pouillaude, 1913: 125, figs. 1-3 ([♂], type-loc. 'Oschima'), **syn. nov.**

Note. — Surprisingly Pouillaude re-described material from the original series of *T. lagopus* under the name *ferriei,* which consequently is a junior synonym. His description perfectly fits Fairmaire's specimen, and may even be based on the other syntype, which Fairmaire saw in R. Oberthur's collection.

Distribution. — Ryukyu Islands, recorded from a single island only.

Material xamined. — Male from Fairmaire's collection (Paris museum), here designated lectotype of *lagopus*: Ryukyu Islands: Oshima [= Amami O shima?], 1895, leg. R. P. Ferrié.

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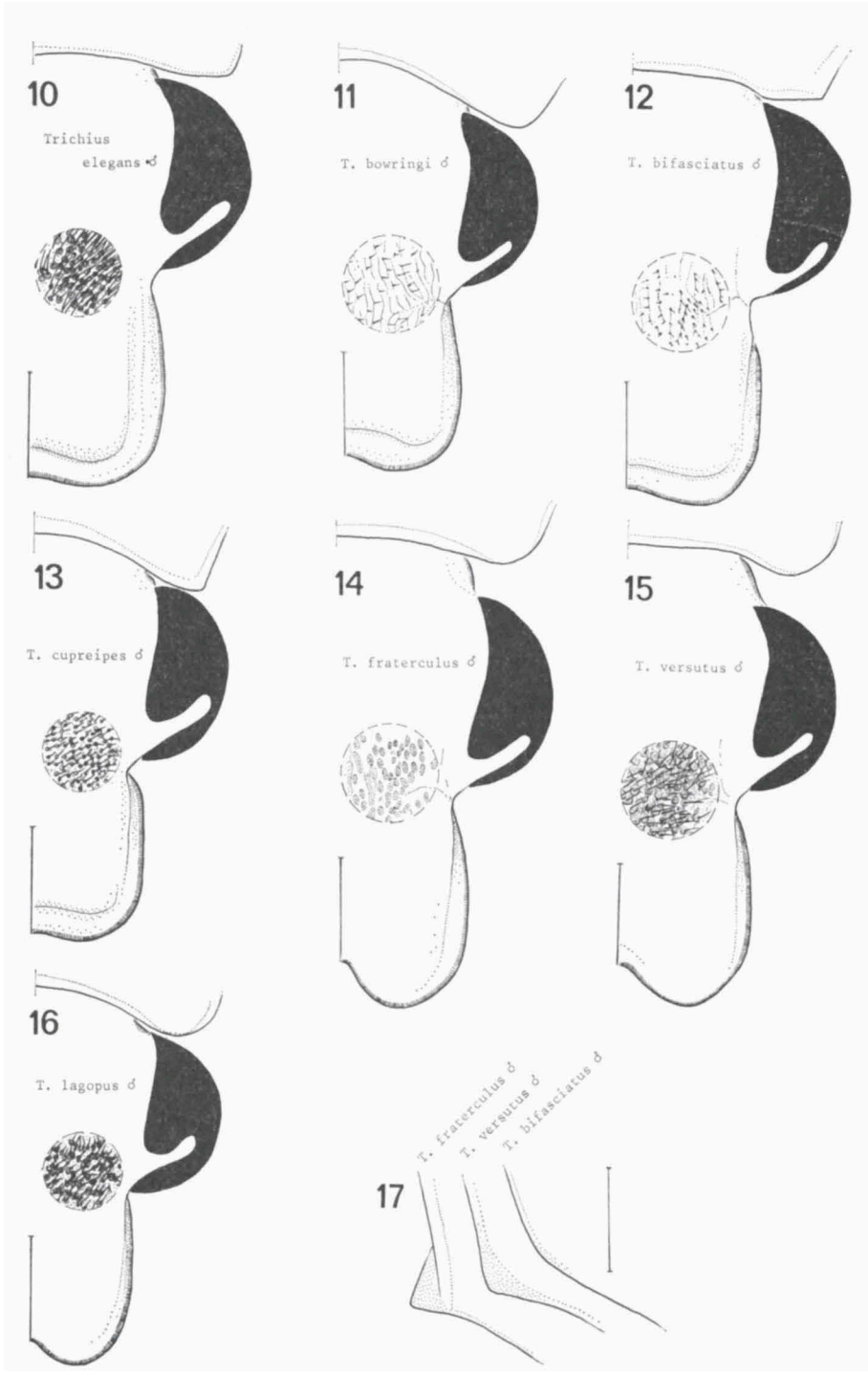
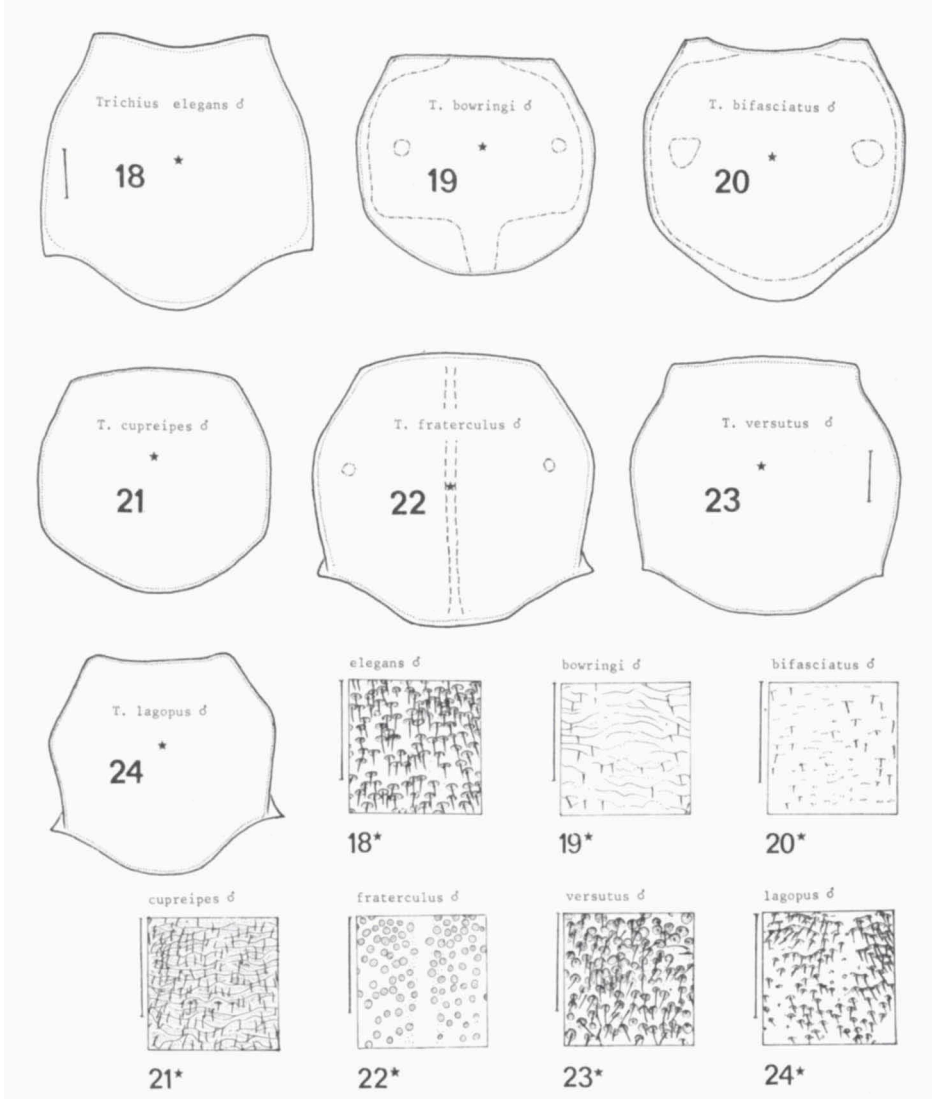


Figs. 10-16. Contours head (left half, full-face view) of *Trichius* species; all males. 10, *T. elegans* Kano, loc. unknown; 11. *T. bowringi* Th., N. China; 12, *T. bifasciatus* Moser, Mauson Mts.; 13, *T. cupreipes* Bourgoin, Puli; 14, *T. fraterculus* Moser, Mauson Mts.; 15, *T. versutus* spec. nov., paratype, Mauson Mts.; 16, *T. lagopus* Fairm., lectotype, Oshima.

Fig. 17. Enlarged left hind angle of pronotum (dorsal view) in three species
Scale-lines = 1 mm.



Figs. 18-24. Contours pronotum (dorsal view) of *Trichius* species, with enlarged details of centres (asterisk); all males. 18, *T. elegans* Kano, loc. unknown; 19, *T. bowringi* Th., N. China; 20, *T. bifasciatus* Moser, Mauson Mts.; 21, *T. cupreipes* Bourgoin, Sokutsu; 22, *T. fraterculus* Moser, Mauson Mts.; 23, *T. versutus* spec. nov., paratype, Mauson Mts.; 24, *T. lagopus* Fairm., lectotype, Oshima. Scale-lines = 1 mm, figs. 18-24 same scale.

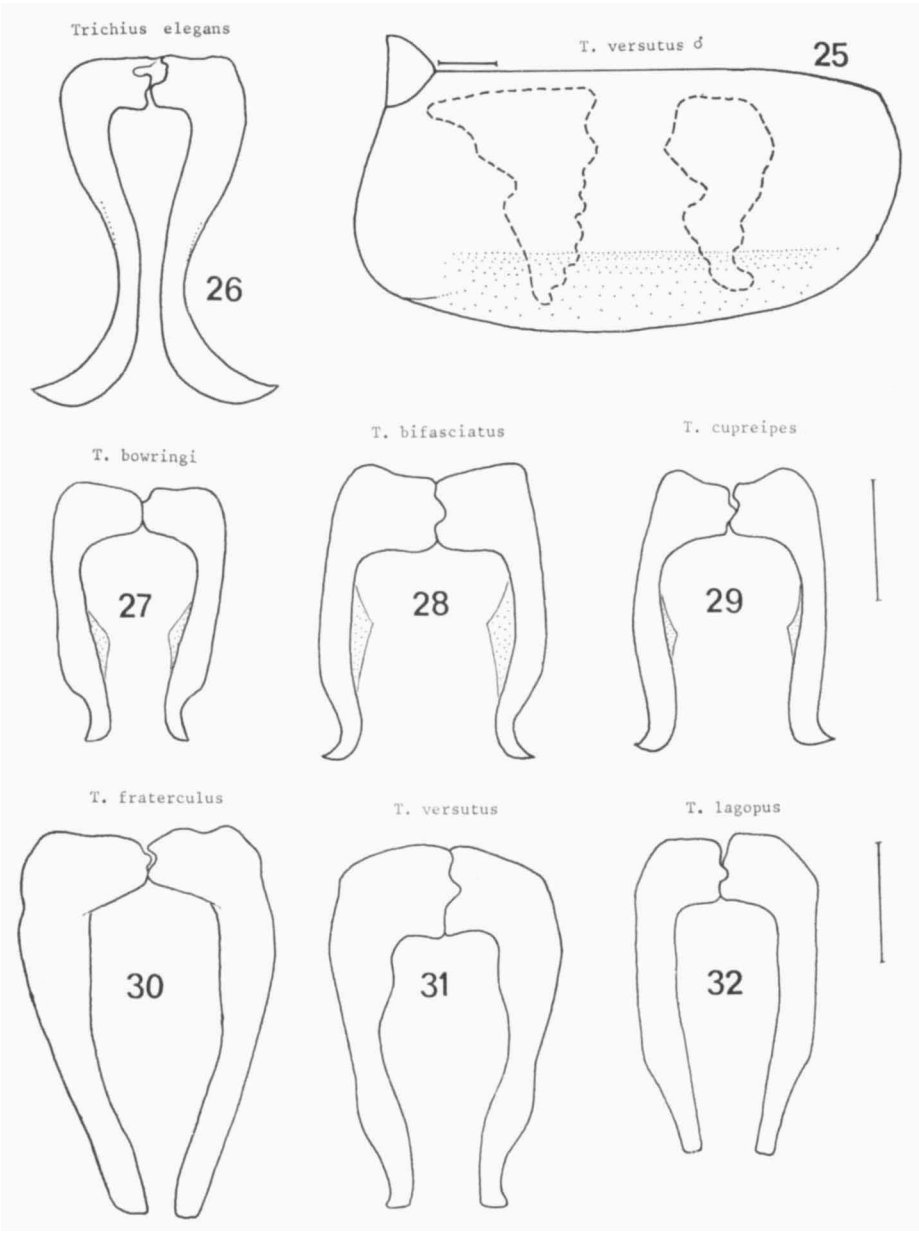
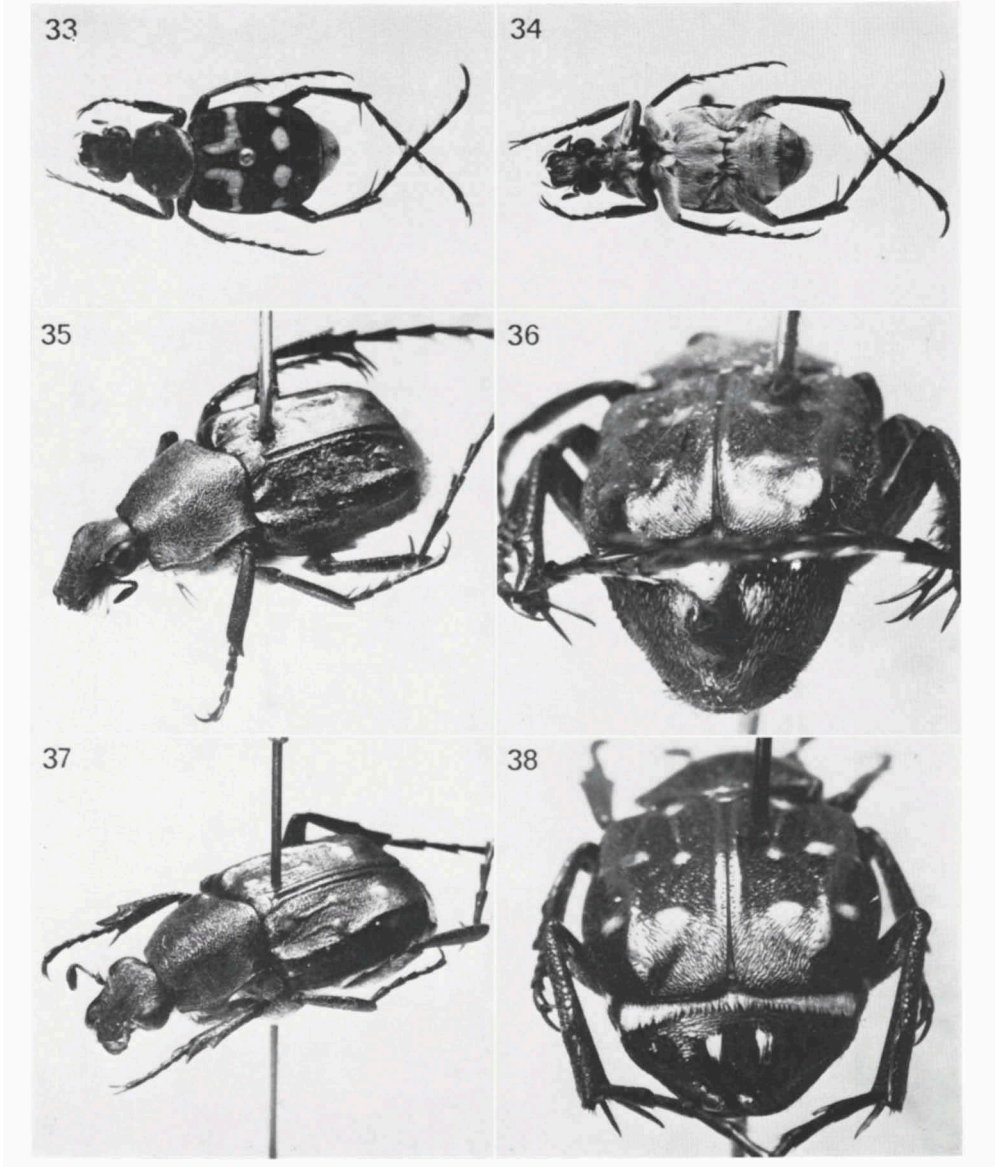
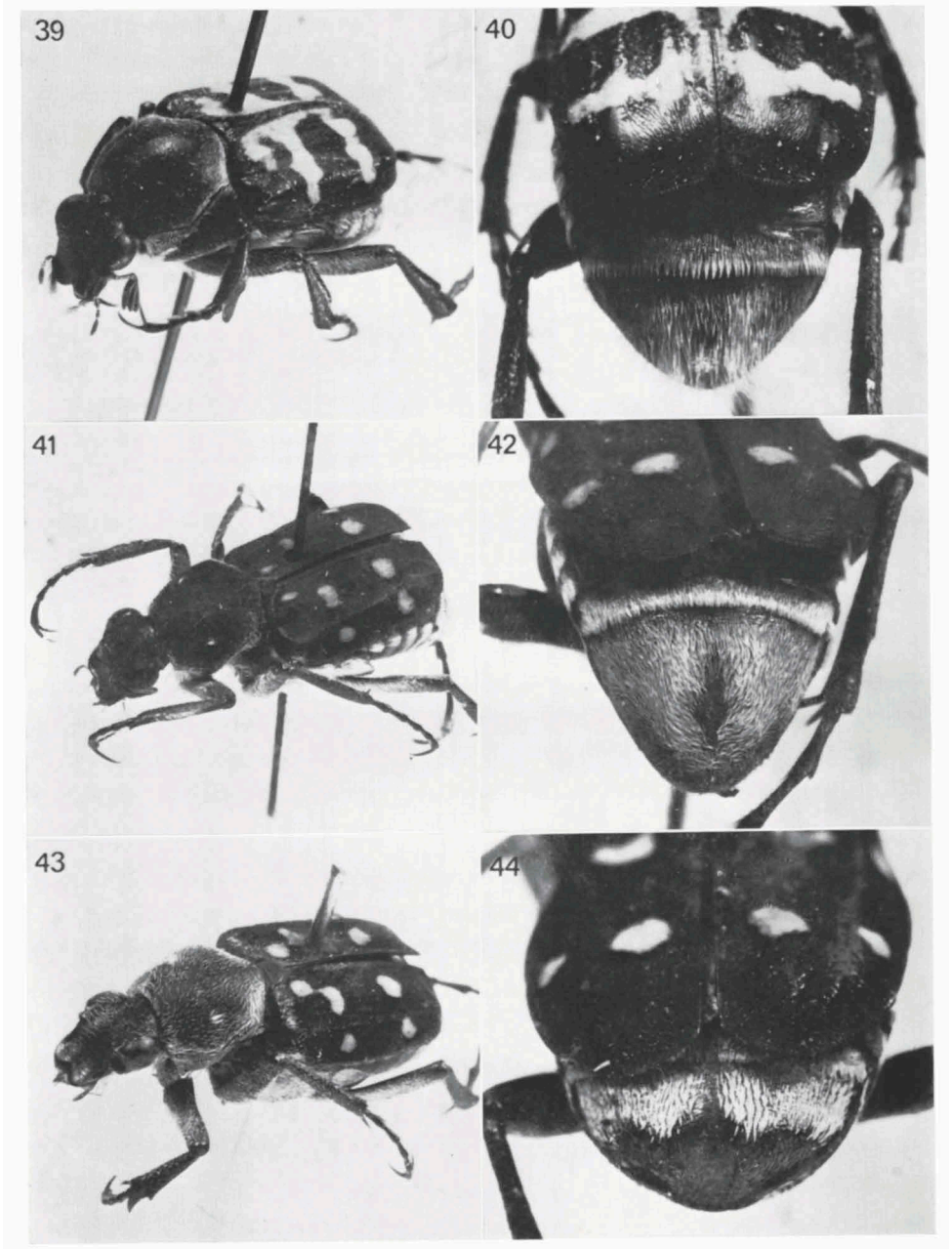


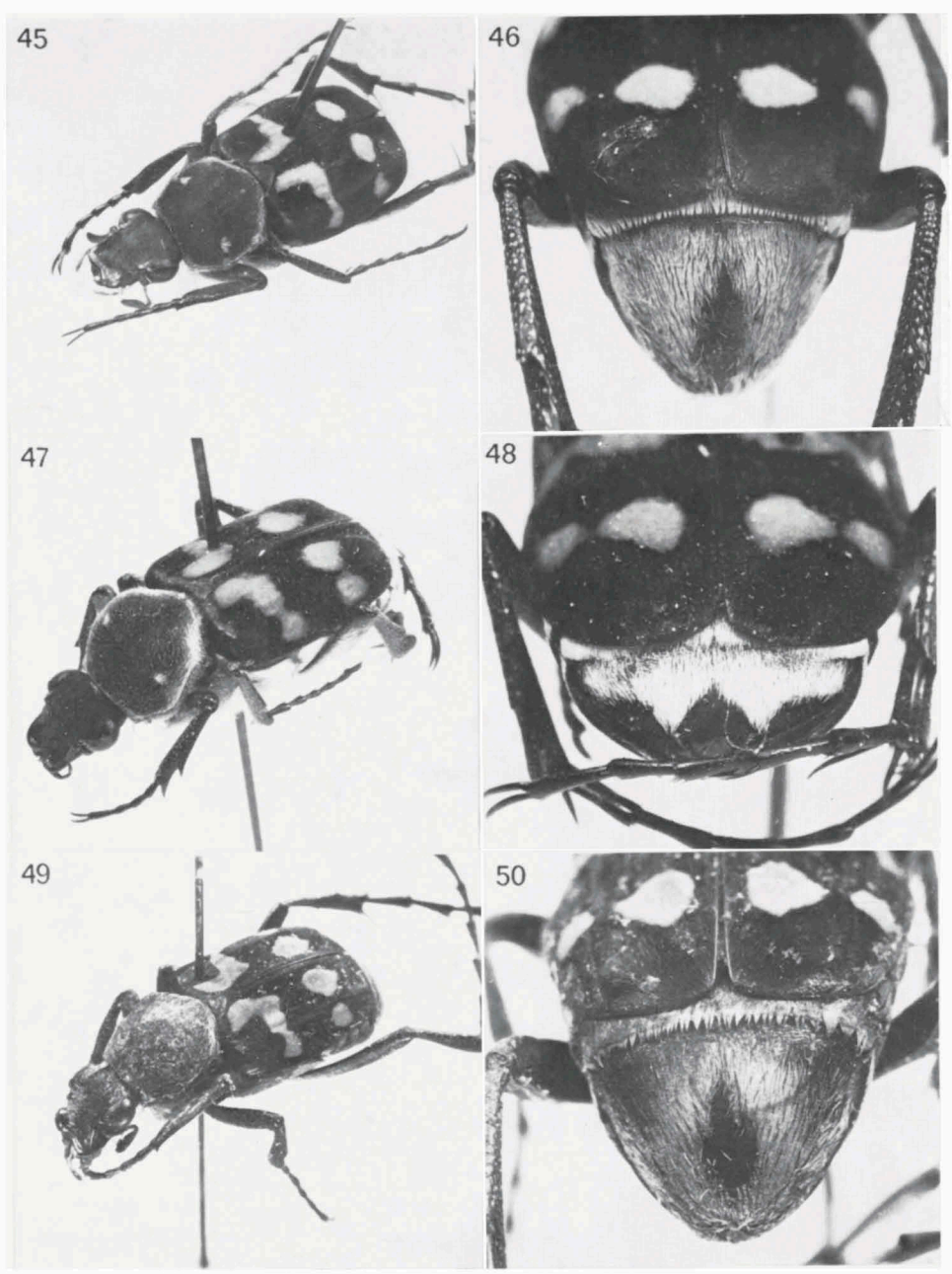
Fig. 25. Left elytron of *Trichius versutus* spec. nov., ♂, paratype, Mauson Mts. Figs. 26-32. Contours parameres (full-face view). 26, *T. elegans* Kano, loc. unknown; 27, *T. bowringi* Th., N. China; 28, *T. bifasciatus* Moser, Mauson Mts.; 29, *T. cupreipes* Bourgoin, Sokutsu; 30, *T. fraterculus* Moser, Mauson Mts.; 31, *T. versutus* spec. nov., paratype, Mauson Mts.; 32, *T. lagopus* Fairm., lectotype, Oshima. Scale-lines = 1 mm, figs. 26-32 same scale.



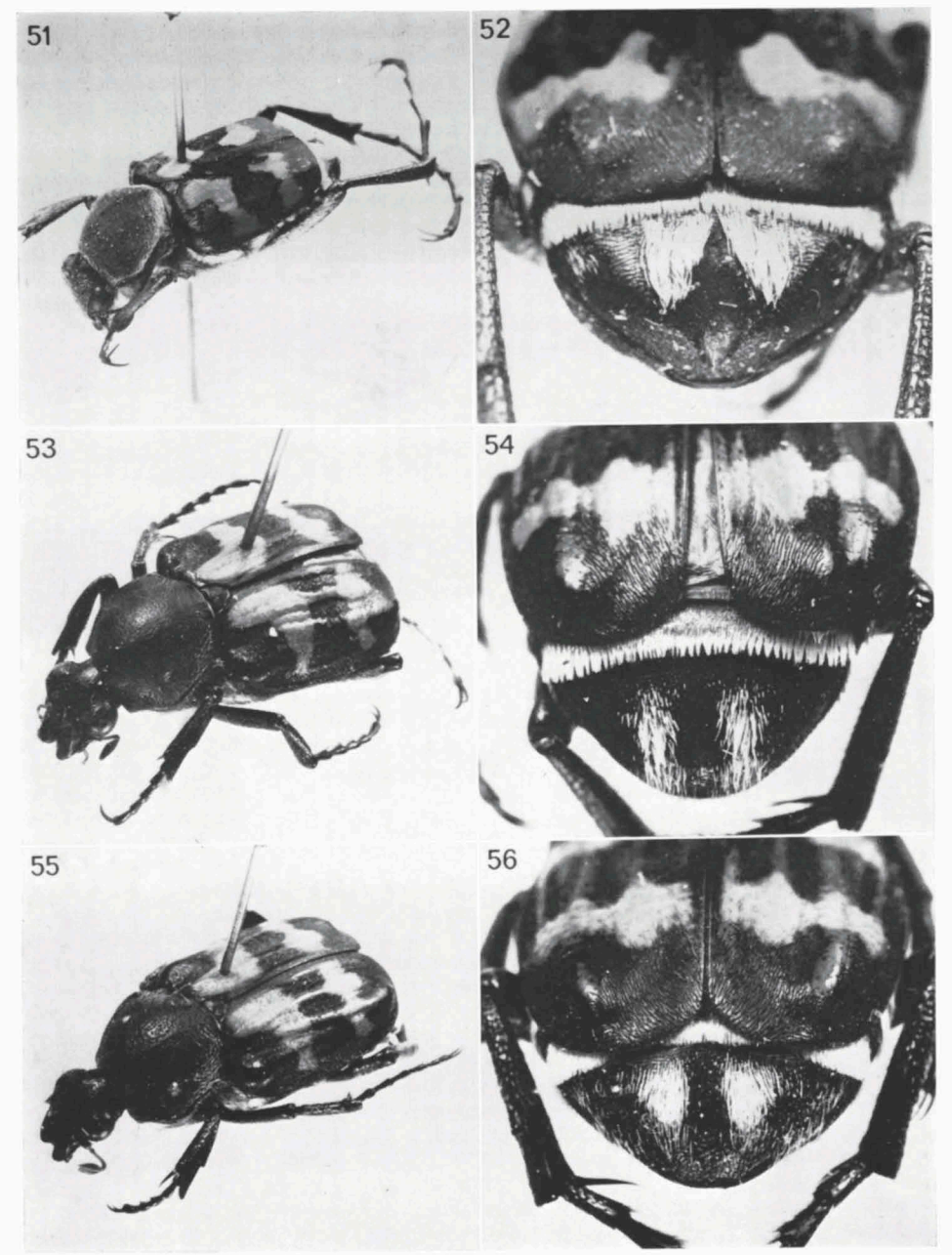
Figs. 33-34. *Trichius bifasciatus* Moser, ♂, Mauson Mts., 18 mm; dorsal (33) and ventral (34) view. Figs. 35-38. Habitus and caudal view of *T. elegans* Kano. 35-36, ♂, loc. unknown, 20.5 mm; 37-38, ♀, Puli, 19.5 mm.



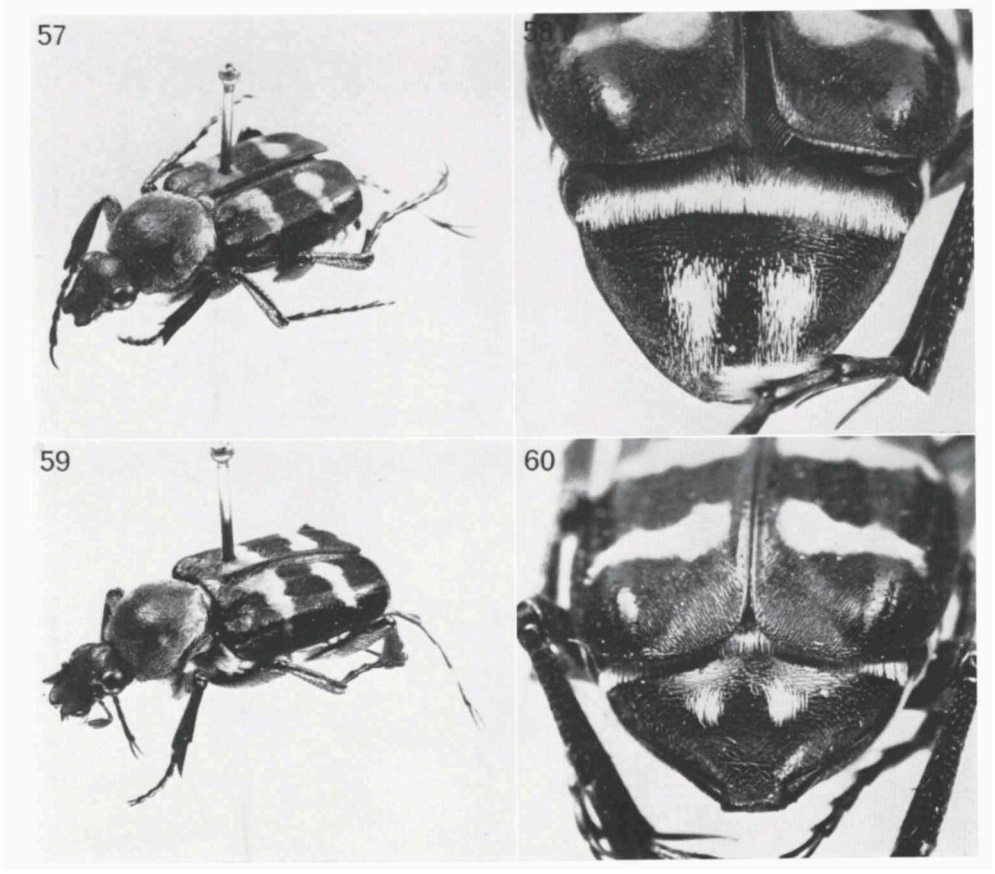
Figs. 39-44. Habitus and caudal view of *Trichius* species. 39-40, *T. lagopus* Fairm., ♂, lectotype, Oshima, 17 mm; 41-44, *T. bowringi* Th., 41-42, ♂, Sjanghai, 16 mm, 43-44, ♀, China, 16 mm.



Figs. 45-50. Habitus and caudal view of *Trichius* species. 45-48, *T. bifasciatus* Moser, 45-46, ♂, Mauson Mts., 18 mm, 47-48, ♀, Mauson Mts., 18.5 mm; 49-50, *T. cupreipes* Bourgoin, ♂, Sokutsu, 18 mm.



Figs. 51-56. Habitus and caudal view of *Trichius* species. 51-52, *T. cupreipes* Bourgoin, ♀, Kosempo, 18 mm; 53-56, *T. fraterculus* Moser, 53-54, ♂, Mauson Mts., 20.5 mm, 55-56, ♀, Mauson Mts., 21 mm.



Figs. 57-60. Habitus and caudal view of *Trichius versutus* spec. nov., Mauson Mts; 57-58, ♂, holotype, 19 mm; 59-60, ♀, allotype, 18.5 mm.