

Subterranean Blind Trechines of the *Trechoblemus* Genus Group (Coleoptera, Carabidae, Trechinae) from the Gotô Islands, Western Japan, with Descriptions of a New Subgenus and Two New Species

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Abstract Anophthalmic trechine beetles found in the subterranean environment of the Gotô Islands off the western coast of Kyushu in western Japan are dealt with. Two new species of the genus *Gotoblemus*, which has been hitherto monotypic and endemic to the Gotô Islands, are described under the names *G. gracilicornis* and *G. exilis*. New subgenus *Kamigotoblemus* is erected for the reception of the two new species above. Phylogenetic relationships between *Gotoblemus*, in particular its new subgenus, and several allied genera are discussed. A key to the genus *Gotoblemus* and its allies is prepared.

Keywords: Coleoptera, *Gotoblemus*, new species, new subgenus, Trechini, Gotô Islands

Introduction

Only two species have so far been recorded from the Gotô Islands, off the western coast of Kyushu, western Japan, as anophthalmic trechine beetles. One of them is *Stygiotrechus pachys* S. UÉNO, 1970, a representative occurring on the western periphery of the generic range of *Stygiotrechus* S. UÉNO, 1958 whose members are widely distributed in western Japan. The other is *Gotoblemus ii* S. UÉNO, 1970, highly depigmented blind trechine with long slender appendages: a unique representative of the genus *Gotoblemus* S. UÉNO, 1970, which is endemic to the Gotô Islands. These two species co-exist in and restricted to the shared type locality, I-ana lava cave system situated at the southernmost area of Fukué-jima Island, which is the westernmost island of Gotôs. According to UÉNO (1970, p. 618) the genus *Gotoblemus* “shows the highest specialization among the Far Eastern members of the *Trechoblemus* complex.... having acquired the characters that can be regarded as the evidence of highly specialized troglobiont?”. His view is basically true even at the present state of our knowledge, though much more specialised genus *Gulaphaenops* S. UÉNO, 1987 from South Korea and several *Gotoblemus*-like genera from China (DEUVE, 1996, 2007; DEUVE & TIAN, 2015, 2016) were later introduced into science. By contrast, members of *Stygiotrechus*, which is also belonging to the *Trechoblemus* phyletic series (JEANNEL, 1928, 1962; CASALE & LANEYRIE, 1982; CASALE *et al.*, 1998), usually exhibit the features adaptive to the endogean environment, even though the majority of representatives of each species-group are only known from caves.

The entomological surveys conducted by the present writer in recent years, however, revealed that more than a dozen of the populations of blind trechine beetles are distributed all over the range of the Gotô Islands. All of the newly discovered trechines of the Gotô Islands are belonging to the *Trechoblemus* phyletic series, and seem to be closely related to the plural genera of the phyletic series occurring in both Japan and continental Asia. The relationships between them are rather intricate, and most of the newly found trechines of Gotô, in spite of their considerably diverse appearances, can be regarded as identical in fundamental external structures with *Stygiotrechus* and its allies at least formally. This situation arises chiefly from the limitation in the available discriminative characteristics of generic importance, therefore, classification of them inevitably depends on the subtle morphological

features, most of which are not necessarily regarded as of generic or subgeneric importance. Hence, the present writer prefers to confine the aim of this paper to introducing the two new distinctive species which are supposed to constitute new subgenus of *Gotoblemus*, leaving the other findings for future studies.

Abbreviations. Abbreviations used for the ratio of the measured body parts are as follows: HL — length of head, measured from the apical margin of clypeus to neck constriction along the mid-line; HW — greatest width of head; PL — length of pronotum, measured along the mid-line; PW — greatest width of pronotum; PA — width of pronotal apex; PB — width of pronotal base; EL — greatest length of elytra; EW — greatest width of elytra; M — arithmetic mean.

The term “frontal setae” in this paper means “setae on frons”, while “soies frontales” in JEANNEL’s sense (JEANNEL, 1926, 1928) corresponds to “supraorbital setae” in this paper; additionally, “suprafrontal setae” in this paper indicates “setae on vertexal area” in accordance with JEANNEL.

Type depository. The holotype specimens designated in this paper will be deposited in the collection of National Museum of Nature and Science, Tsukuba (NSMT).

Taxonomy

Kamigotoblemus NAITÔ, subgen. nov.

Type species: *Gotoblemus gracilicornis* NAITÔ, sp. nov.

Diagnosis. Small to very small-sized anophthalmic trechines of elongate, subparallel-sided but medially constricted body with very large head and small cordate pronotum, highly depigmented and apterous; colour two-tone with rufotestaceous fore-body and pale yellowish hind-body; dorsal surface of head hairy; setae on fronto-vertexal area indistinctly differentiated; frontal furrows complete and not angulate at middle; right mandible distinctly tridentate; labium not completely fused, with labial suture visible throughout; mentum tooth simple; submentum heptasetose or octosetose; pronotum hairy without distinct discal setae; pronotal sides ciliated and with two pairs of lateral setae; scutellum large; elytra with a row of pubescence on each interval and ciliae on lateral margins; humeral margins without distinct serrulation nor dentation; without transverse furrow on basal peduncle for the reception of pronotal base; two elytral discal setae on each stria 3 (not on interval 4); apical recurrent striole directed to stria 5; arrangement of marginal umbilicate pores ordinary for the phyletic series; protibia entirely pubescent and not externally grooved; male protarsi with proximal two segments dilated; aedeagus tubular and gently arcuate with widely truncated apex; copulatory piece anisotopic.

From the nominate subgenus *Gotoblemus* S. UÉNO (1970, p. 615) new subgenus is readily discriminated by the presence of labial suture and male protarsi with two dilated segments.

Comprising two species: type species and *G. (K.) exilis* NAITÔ, sp. nov. to be described on later pages.

Description. Microsculpture of whole dorsal surface composed of mostly isodiametric polygonal meshes, though coarser on frons and pronotum, finer on elytra, not very shiny.

Head very large, truncated suboval rather than subquadrate (but subquadrate in *G. (K.) exilis*); neck very wide with shallow constriction; frontal furrows entire, gently and regularly arcuate both in front and behind, deep in anterior three-fifths; eyes totally absent; genae sparsely pubescent, temporal setae absent (but usually recognisable in *G. (K.) exilis*); supraorbital areas hairy though sparsely, with two pairs of supraorbital setae located on lines convergent posteriad; fronto-vertexal areas covered with rather long and stout suberect hairs in addition to short pubescence, a pair of indistinct suprafron-

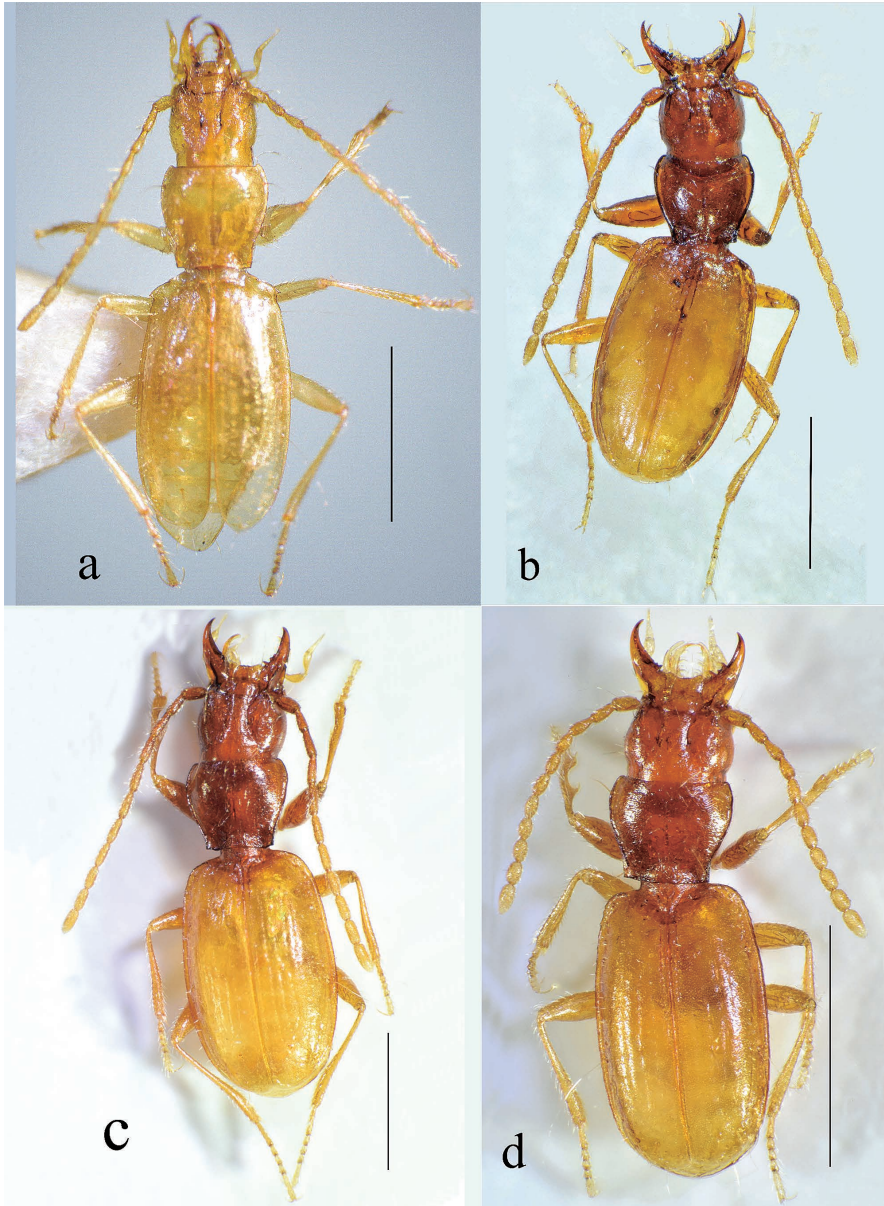


Fig. 1. Habitus. — a, *Microblemus riae* S. UENO (holotype); b, *Gotoblemus* (*Kamigotoblemus*) *gracilicornis* subgen. et sp. nov. (holotype); c, ditto, female (paratype); d, *G. (K.) exilis* sp. nov. (holotype). Scales: 1.00 mm.

tal setae usually barely recognizable in type species, a pair of frontal and a pair of suprafrontal setae almost always present in *G. (K.) exilis*; labrum transverse, sexsetose, shallowly emarginate at apex and usually slightly bituberculate at the middle of apical margin; clypeus quadrisetose; right mandible distinctly tridentate with large conical premolar tooth distinctly isolated; in type species both distal and proximal cusps of retinaculum almost equally developed (sometimes proximal cusp is larger than

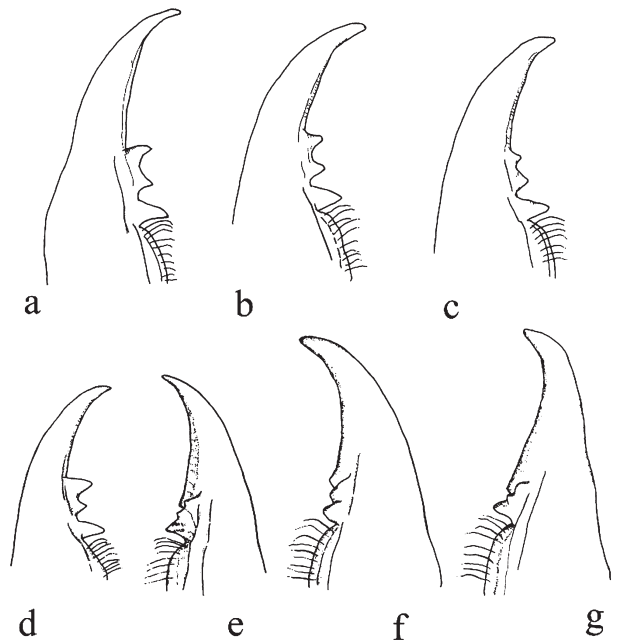


Fig. 2. Mandibles, ventral view (a–d, right; e–g, left). — a, *Microblemus rieae* S. UÉNO; b–c & f–g, *Gotoblemus* (*Kamigotoblemus*) *gracilicornis* sp. nov.; d–e, *G. (K.) exilis* sp. nov. (left mandible of *Microblemus* is not represented, because the details of its dentition were not observable in the unique holotype due to the inconvenient posture of it). Scale: 0.20 mm.

distal one), though shorter and obtuser than in *Gotoblemus* s. str. (Figs. 2 b–c), but in *G. (K.) exilis* proximal retinacular cusp is smaller than distal one as in *Gotoblemus* s. str. (Fig. 2 d); left mandible supposedly bidentate, though proximal portion of retinaculum is produced into caniniform process which is similar to the premolar tooth of right mandible, distal portion of retinaculum stout with one or two blunt cusp(s) in type species (Figs. 2 f–g), but in *G. (K.) exilis* proximal process of left retinaculum more acute, and the distal portion of it is distinctly bicuspid as in *Gotoblemus* s. str. (Fig. 2 e); mentum shallowly and widely concave, with a pair of setae and a pair of sensory pits which are distinctly, though minutely, punctured at the bottom, mentum tooth medium-sized, thin and not flanked with edges, slightly leaning towards buccal orifice apicad, and simply rounded at the tip in type species; in *G. (K.) exilis* mentum tooth relatively small, short and flanked with edges, truncated or only slightly emarginate at the tip; labial suture visible throughout though finely; submentum with a transverse row of seven or eight setae in type species; ligula octosetose, short, but distinctly triangularly, though obtusangularly, produced at apex, sometimes apicalmost portion on which the longest two setae are inserted is narrowly protruding, but in *G. (K.) exilis* ligula is subquadrately produced as in *Gotoblemus* s. str.; paraglossae as in *Gotoblemus* s. str.; penultimate segment of labial palpus quadrise-tose, rather plump, swollen at middle, apical labial palpomere elongated subconical, a little shorter than the preceding one, more strongly dilated proximad than in *Gotoblemus* s. str.; maxillary palpus stouter than in *Gotoblemus* s. str., with penultimate segment (which is covered with several vestigial minute hairs) more strongly dilated apicad, and ultimate one (which is thin in apical portion and longer than the preceding one) more strongly dilated proximad than in *Gotoblemus* s. str.; galea and lac-inia as in *Gotoblemus* s. str.; antennae filiform, long and slender (but short and submoniliform in *G.*

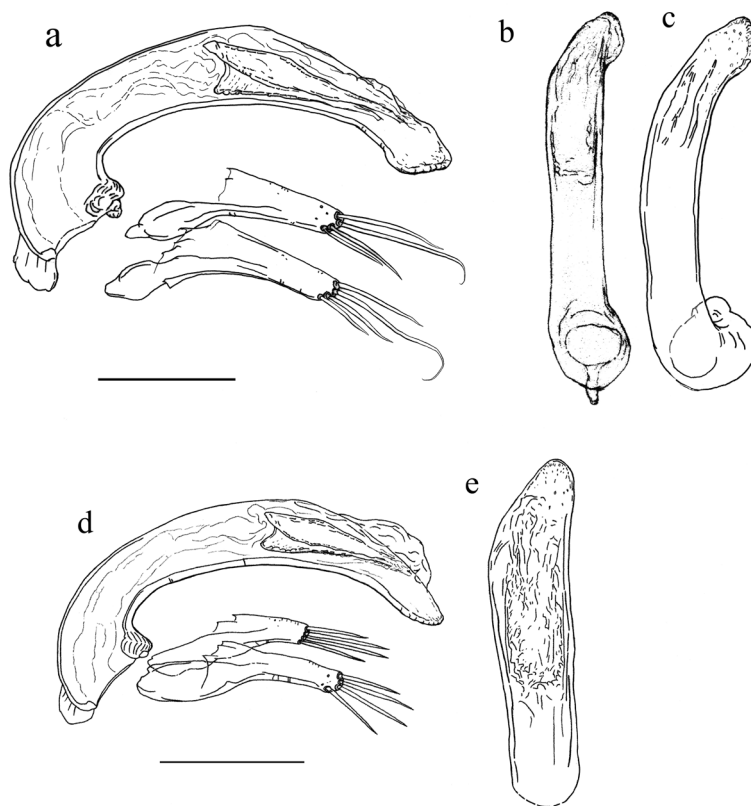


Fig. 3. Male genitalia of *Gotoblemus* spp. — a & d, Left lateral view; b & e, dorsal view; c, left oblique dorsal view. — a–c, *G. (Kamigotoblemus) gracilicornis* sp. nov.; d–e, *G. (K.) exilis* sp. nov. Scales: 0.10 mm.

(K.) exilis); segments 3–10 each more distinctly cylindrical (but not slenderer) than in the nominate subgenus.

Pronotum subcordate to subtrapezoidal, shorter than in *Gotoblemus* s. str., dorsum well convex, covered with rather long and stout suberect hairs; discal setae indistinguishable as in *Gotoblemus* s. str.; sides narrowly bordered and ciliated throughout, both antero-lateral and postangular setae present, the latter of which only a little removed from the hind angle forwards; basal part narrow, hardly lobed unlike *Stygiotrechus*. Scutellum subpentagonal, largely exposed as in the nominate subgenus.

Elytra oblong-oval, subparallel-sided, wider than pronotum; basal portions without transverse depression along the prehumeral borders unlike *Stygiotrechus*; scutellar area seemingly elevated owing to the slight obtriangular depression on each side of the area; humeral parts not strongly explanate unlike *Stygiotrechus*; shoulders more distinct than in *Gotoblemus* s. str.; sides narrowly bordered and ciliated almost throughout; lateral margin extremely minutely and faintly serrulated nearly throughout, but the serrulation is essentially associated with the insertion of fringing ciliae and not appreciably pronounced even at the humeral sides (though in *G. (K.) exilis* usually only slightly pronounced at the humeral sides); apices separately rounded; striae superficial and degenerative, though a little more distinct than in *Gotoblemus* s. str.; scutellar striole existing in the form of vague oblique impression on each side of scutellar area; apical striole short, directed to the site of stria 5; intervals faintly convex,

each with a row of erect pubescence; two setiferous dorsal pores present on each stria 3; juxta-scutellar pore located near the base of interval 3; preapical pore existing on the apical anastomosis of striae 2 and 3, and obviously nearer to suture than to apex in type species, but only a little more widely distant from apex than from suture in *G. (K.) exilis*; arrangement of marginal umbilicate pores basically identical with that of the nominate subgenus.

Ventral surface as in *Gotoblemus* s. str. Legs fairly slender though not particularly long; both meso- and metatibiae more or less dilated apicad and slightly outcurved; tarsi thin, proximal two segments of male protarsi moderately dilated, each spurred inwards at apex, and provided beneath with adhesive appendages; female first protarsomere moderately externally produced, longer and wider than segment 2, but shorter than segments 2–3 combined (Fig. 7), while in *Gotoblemus* s. str. female fist protarsomere moderately externally produced, and as long as segments 2–3 combined (Fig. 6).

Aedeagus tubular, compressed (in type species), and gently arcuate, with spatulate apical lobe widely truncated at the tip (subtruncated or widely rounded at apex in *G. (K.) exilis*); sagittal aileron distinct; copulatory piece of internal sac anisotropic in lateral position with convex face towards the right to ventral side; styles each provided with four apical setae.

Female genitalia (Fig. 14 b & c) as in nominate subgenus (Fig. 14 a); gonocoxite¹⁾ (apical segment of gonostylus) subconical to unguiform, a sensory fovea bearing a pair of fine setae present on the ventral face near apex, dorsal surface provided with two gomphiform setae, of which more internally positioned one is much larger than the other; gonosubcoxite (proximal segment of gonostylus) dolioliform to saddle-shaped with arcuate inner margin, whose apico-internal corner possesses only one moderate-sized (sometimes long or weak) seta; laterotergite pterygoid with 3 to 5 relatively long setae along the distal margin, and inwardly supplemented few setae are usually found.

Range. Kami-gotô area (northeastern area) of the Gotô Islands, off the northwestern coast of Kyushu, western Japan.

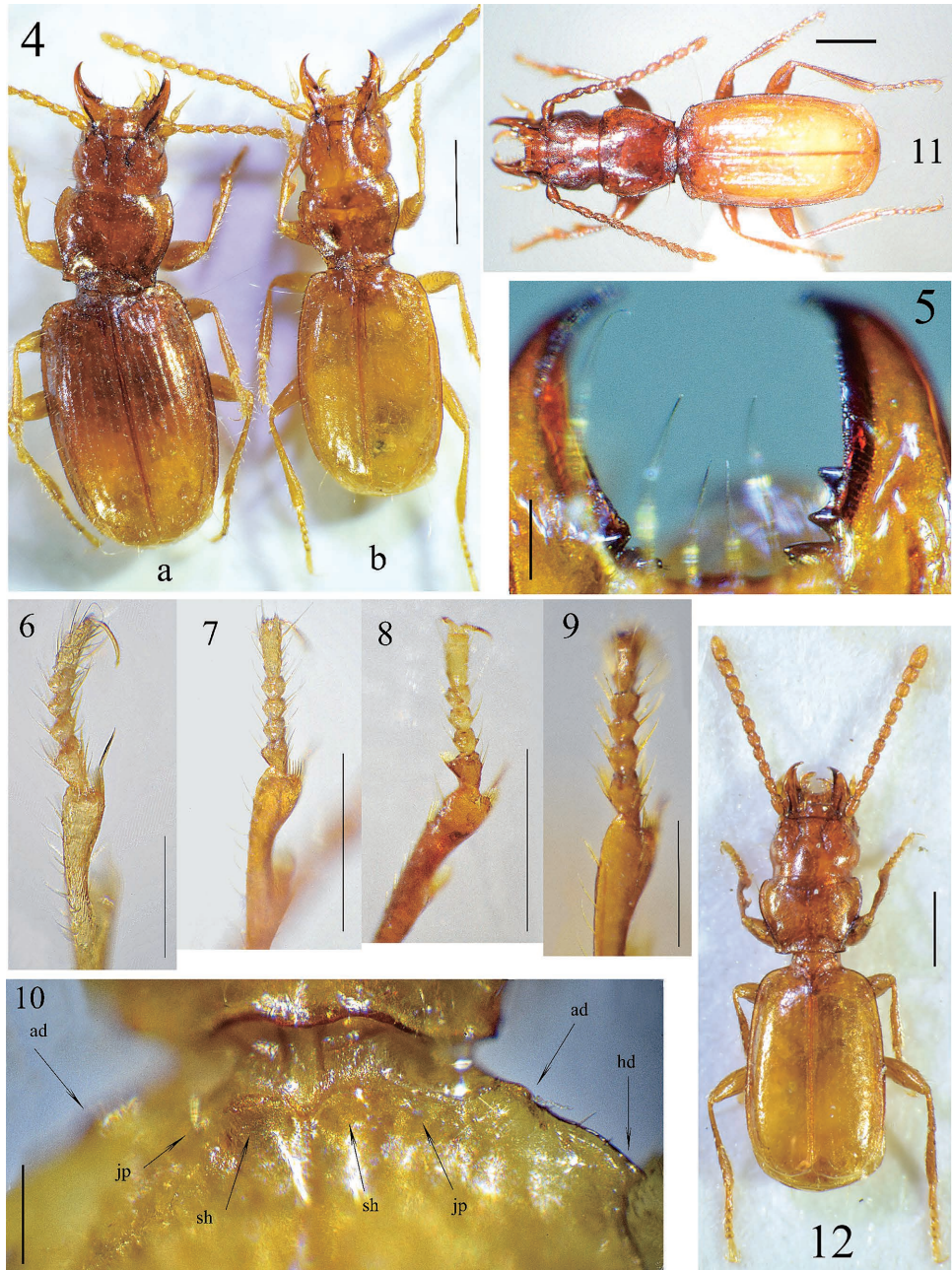
Etymology. The name of new subgenus refers to the range of its distribution. It is masculine in gender.

Affinities. Despite the fundamental differences in the structure of labium and in the conformation of male protarsi, new subgenus *Kamigotoblemus* is placed in the ground genus *Gotoblemus* ultimately in view of the exceeding similarity in their male genitalia, and of the geographic situation of their type localities. Following features, which are shared by two subgenera of *Gotoblemus*, also substantiate their affinity: similar degree of depigmentation; basically similar body form; hairy dorsal surface of fore-body without clearly differentiated pronotal discal setae; distinctly tridentate right mandible; simple mentum tooth; large scutellum; similar mode of elytral lateral serrulation; very superficial elytral striation; identical setal arrangement; slender appendages (in type species); pubescent protibia without external groove.

In many details, characteristics of *G. (K.) exilis* do not accord with those of the type species. Nevertheless, *G. (K.) exilis* is included in the same subgenus as the type species on the basis of: similar degree of depigmentation; similar mode of microsculpture; hairy dorsal surface of fore-body; similarly formed pronotum and elytra; similar mode of elytral marginal serrulation; degenerative elytral striation.

Erection of the new subgenus *Kamigotoblemus* obscures to a considerable extent the distinction between *Gotoblemus* and *Stygiotrechus* S. UÉNO (1958, p. 123, 1969 a, 1970, 1973), which is considered to be the closest relative of the former genus. According to UÉNO (1970, p. 615) *Gotoblemus* is discriminated from *Stygiotrechus* by the following features (in parentheses are the features of *Stygio-*

1) According to authors “gonocoxite” above is called “gonostylus” and “gonosubcoxite” above called “gonocoxite” (cf. DEUVE, 1988).



Figs. 4–12. Habitus and body parts of trechines. — 4 & 11–12, Habitus (female); 5, mandibles (dorsal view); 6–9, apical portions of female left fore-legs (dorsal view); 10, basal parts of pronotum and elytra (dorsal view). — 4, a: *Stygotrechus miyamai* S. UENO (smallest species of Japanese blind trechine), b: *Gotoblemus* (*Kamigotoblemus*) *exilis* sp. nov. (Wakamatsu-jima population); 5 & 11, *S. unidentatus* S. UENO; 6, *G.* (s. str.) *ii* S. UENO; 7, *G.* (*K.*) *gracilicornis* sp. nov.; 8, *Coreoblemus venustus* S. UENO; 9, *S. kubotai* S. UENO; 10, *Microblemus rieae* S. UENO (jp: juxta scutellar pore, sh: shelf-like process, ad: anterior humeral denticle, hd: larger humeral denticle); 12, *Aepiblemus caeculus* BELOUSOV et KABAK. Scales: 0.50 mm for 4 & 11–12; 0.10 mm for 5 & 10; 0.25 mm for 6–9.

trechus): 1) completely fused labium (vs. labial suture usually recognizable); 2) mentum tooth with simply rounded apex (vs. usually bifid at apex); 3) hairy surface of head with more than two pairs of setae on fronto-vertexal area (vs. usually with a pair of frontal or suprafrontal setae in addition to short pubescence); 4) absence of differentiated discal setae on pronotum (vs. usually with two or three pairs of setae); 5) absence of humeral denticles (vs. humeral margin dentate or serrulate); 6) single dilatation in male protarsi (vs. usually with two dilated segments); 7) spatulate apical lobe of aedeagus with truncated extremity (vs. aedeagal apex usually more narrowly produced). Features 1) and 6) are the features in which subgenus *Kamigotoblemus* differs from the nominate subgenus, thus are not deserving of discriminative features of *Gotoblemus* including the new subgenus. Besides, problematical exceptions concerning these diagnostic features are to be enumerated as follows: to 1) in the group of *S. morimotoi* S. UÉNO, 1973 labium is practically completely fused, though this group had better be discriminated from the other groups of *Stygiotrechus* at least at the subgeneric level; to 2) in certain species of *Stygiotrechus* (e.g., *S. parvulus* S. UÉNO, 1969 and *S. unidentatus* S. UÉNO, 1969), mentum tooth sometimes can be regarded as simple, though even in such a case extremity of the tooth is nearly truncated, not roundly produced (conversely mentum tooth is truncated in *G. (K.) exilis*); to 3) in some species (e.g., *S. miyamai* S. UÉNO, 2009, *S. izumonis* S. UÉNO, 2008 and so on) more than two pairs of setae present on fronto-vertexal area; to 4) discal setae on pronotum are masked by long pubescent hairs in some species (e.g., *S. izumonis*, *S. miyamai*, *S. kadanus* S. UÉNO, 2001 and so on); to 6) in *S. esakii* S. UÉNO, 1969 male protarsi are completely identical in conformation to those of the female, though the single dilated articulation in male protarsi is not known in *Stygiotrechus*; to 7) this feature is not distinct in *G. (K.) exilis*. Added to these, the writer would like to point out the following peculiarities of *Stygiotrechus*, which should serve to discriminate the two genera in question, although they are also subject to some exceptions: usually darker and more brownish; frontal furrows usually shallower and sometimes mal-defined; proximal cusp of retinaculum on right mandible almost always more reduced; pronotum proportionally larger, and its basal parts tend to form posteriorly protruding lobe-like process for covering the elytral basal parts; scutellum usually more reduced; elytral basal parts transversally depressed subparallel to prehumeral borders; humeral sides more strongly reflexed; serrulation of elytral lateral margin confined to humeral and prehumeral areas; elytral striation usually more distinct; female protarsomere 1 either hardly or more inconspicuously externally produced, obscured by the thickness of the subsequent segments (Fig. 9); external face of protibia longitudinally grooved according to species groups²⁾; internal margin of gonosubcoxite of female genitalia with two (not one) rather long setae close to the apico-internal corner except in certain species (e.g., *S. miyoshiorum*) (Fig. 14 f–i).

As is depicted by UÉNO (1969 a, fig. 2), the right mandible of *S. unidentatus* is usually provided with very, sometimes extremely, short and obtuse retinaculum with nearly equally developed distal and proximal cusps, though details are more or less variable according to both individual and the degree of abrasion (Fig. 5). At any rate it can safely be said that in *S. unidentatus* the proximal retinacular cusp of right mandible is, proportionally, rather exceptionally developed within the genus, and that *S. unidentatus* is similar to *G. (K.) gracilicornis* in this respect. It is true that among the congeners *S. unidentatus* exhibits particular similarity to *G. (K.) gracilicornis* as follows: body two-tone with reddish fore-body and pale yellowish hind-body (in dried specimen); microsculpture entirely isodiametric polygonal; head very large in contrast to relatively small cordate pronotum (in *S. unidentatus*; PW/

2) Contrary to the original description, protibia is externally grooved in type species of the genus, *S. kubotai* S. UÉNO, 1958 (Fig. 9).

HW 1.12–1.19 (M 1.16), PA/PB 1.18–1.25 (M 1.22)); elytra elongate and strongly parallel-sided; humeral margin (before the large denticle) without distinct serrulation; elytral striation very superficial and degenerative (Fig. 11). With all similarities, however, *S. unidentatus* bears peculiar traits most of which accord with the general morphological evolutionary trend of *Stygiotrechus*: frontal furrows very shallow, mal-defined, and partially obliterated; discal setae on both head and pronotum clearly differentiated; pronotal base somewhat lobed; humeral margin provided with a large denticle³⁾. Concerning the last trait, it is of special interest that a Chinese blind trechine *Microblemus rieae* S. UÉNO, 2007, which also resembles *G. (K.) gracilicornis* and possesses developed proximal cusp of retinaculum on right mandible, bears large humeral denticles similarly formed as in *S. unidentatus* (Figs. 1 a, 2 a & 10); thus, UÉNO suggested possible relationships between *Microblemus* and “the *Stygiotrechus* lineage (or complex)”, which comprises *Stygiotrechus*, *Daiconotrechus*, *Coreoblemus*, and *Gotoblemus* (S. UÉNO, 1973, p. 23, 2007 b, p. 19).

Coreoblemus S. UÉNO (1969 b, p. 66, 2007 a, p. 386) from South Korea and Tsushima Islands of western Japan is supposed to be related to *Gotoblemus* in pale coloration and in body form with strongly cordate small pronotum and ample elytra devoid of distinct lateral serrulation. Particularly, this Korean genus more closely approaches to new subgenus of *Gotoblemus* in having incompletely fused labium and relatively short appendages. However, their relationships do not seem to be so direct, since in *Coreoblemus* dorsal pubescence of fore-body is differentiated into numerous discal setae and marginal umbilical pores of elytra are not aggregated. Substantial differences which separate *Coreoblemus* from *Gotoblemus* (s. lat.) are summarised as follows: dorsal surface glabrous except for numerous strong discal setae; mentum tooth acutely pointed at apex; pores of humeral and middle set of marginal umbilicate series forming continuous series; first segment of female protarsus distinctly angulately expanded laterad (Fig. 8); aedeagus rather differently shaped. On the other hand, diversification in the secondary sexual character of male protarsi occurred between Korean forms (with two dilated segments) and Tsushima forms (with a single dilated segment) of *Coreoblemus* parallels to that found between the two subgenera of *Gotoblemus*.

Remarks. Due to its pale coloration and parallel-sided elytra without distinct humeral serrulation, *G. (K.) exilis* resembles *Daiconotrechus* (s. str.) *iwatai* (S. UÉNO, 1970, p. 610, 1971, p. 182). In appearances *G. (K.) exilis* is also surprisingly similar to *Aepiblemus caeculus* BELOUSOV et KABAK, 1993, pale-colored minute blind trechine of the *Trechoblemus* series from eastern Kazakhstan, supposed to be an archaic form of the phyletic series by the authors (Fig. 12). At least at the point of the original description, the authors of *Aepiblemus* considered *Daiconotrechus* (s. str.) to be the closest taxon of their genus. They further pointed out that aedeagus of *Aepiblemus caeculus* (unique representative of the genus at that time) is similar to that of *G. (s. str.) ii*; in this respect, it is astonishing that aedeagus of the former species is more similar, in distinct apical dilatation of apical lobe, to that of *G. (K.) gracilicornis* than to that of *G. (s. str.) ii*. BELOUSOV and KABAK (1993, p. 140) considered that the genus *Gotoblemus* differs from their genus in the following features: 1) troglobiomorphic habitus; 2) tridentate right mandible; 3) completely fused labium; 4) absence of pronotal discal setae; 5) male protarsi with single dilated segment. However, by the erection of the subgenus *Kamigotoblemus* features 1), 3), and 5) became invalid for the diagnostic features of the genus. Nevertheless, their resem-

3) *Stygiotrechus unidentatus* forms the species group comprising two species. The other species of the two, *S. miyoshiorum* S. UÉNO, 1969, possesses a little more pronounced features characteristic to the *Stygiotrechus* such as humeral denticles, and the proximal retinacular cusp of right mandible is more reduced in this species than in *S. unidentatus*.

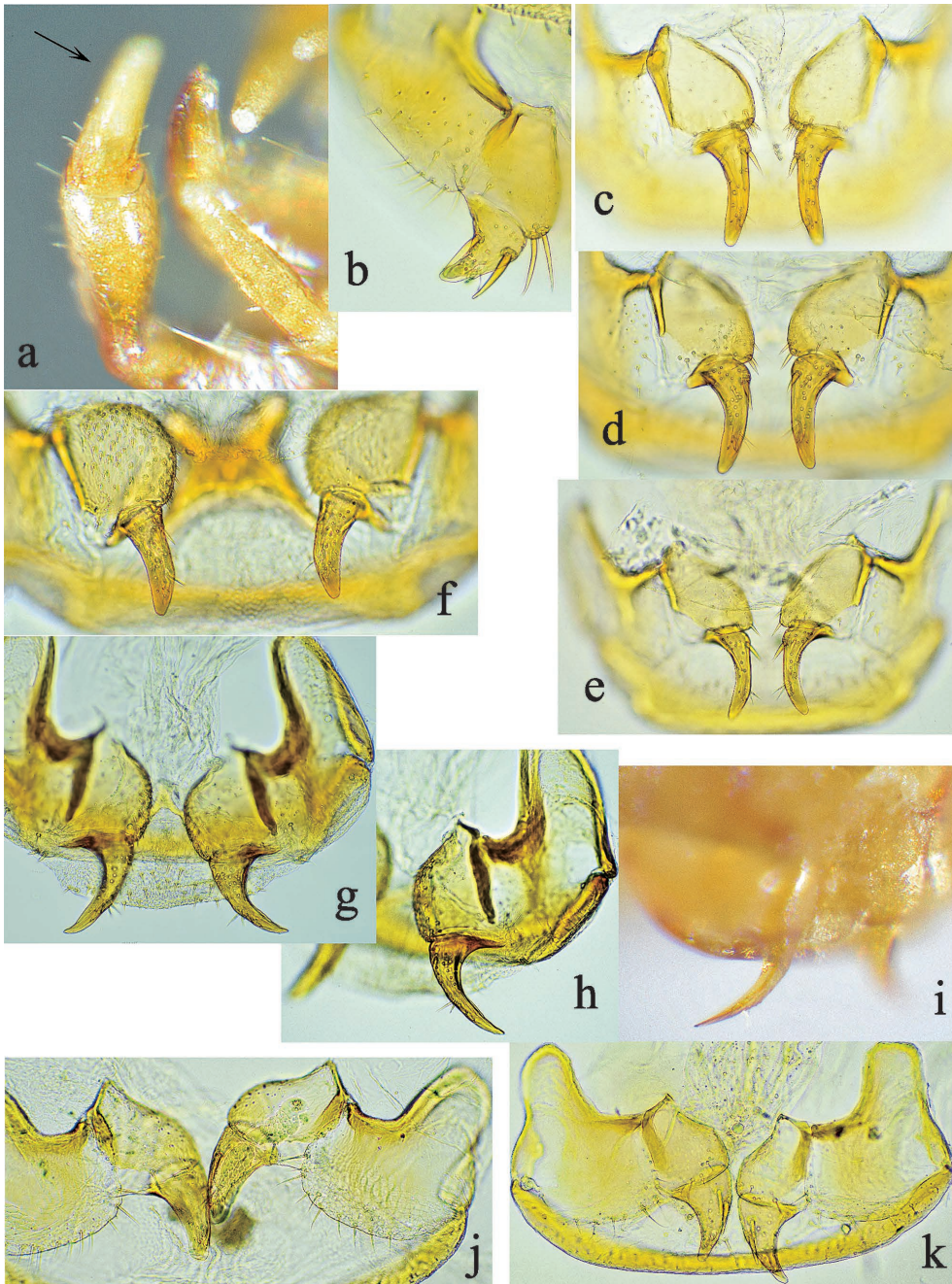


Fig. 13. Buccal appendages (a) and ventral view of female genitalia (b–k) of the *Trechoblemus* series. — a, *Duvاليoblemus sichuanicus* DEUVE, apical portions of palpi, arrow indicates pubescent apical maxillary palpomere; b, *Duvاليoblemus sichuanicus* DEUVE; c, *Duvاليopsis transsylvanica* CSIKI; d, *Trechoblemus micros* HERBST; e, *T. microphthalmus* S. UENO; f, *Masuzonoblemus tristis* S. UENO; g & h, *Oroblemus caecus* S. UENO et A. YOSHIDA; i, *Daiconotrechus* (s. str.) *iwatai* S. UENO; j, *Daiconotrechus* (*Tsuiblemus*) *tsushimaensis* S. UENO; k, *Coreoblemus miyamai* S. UENO.

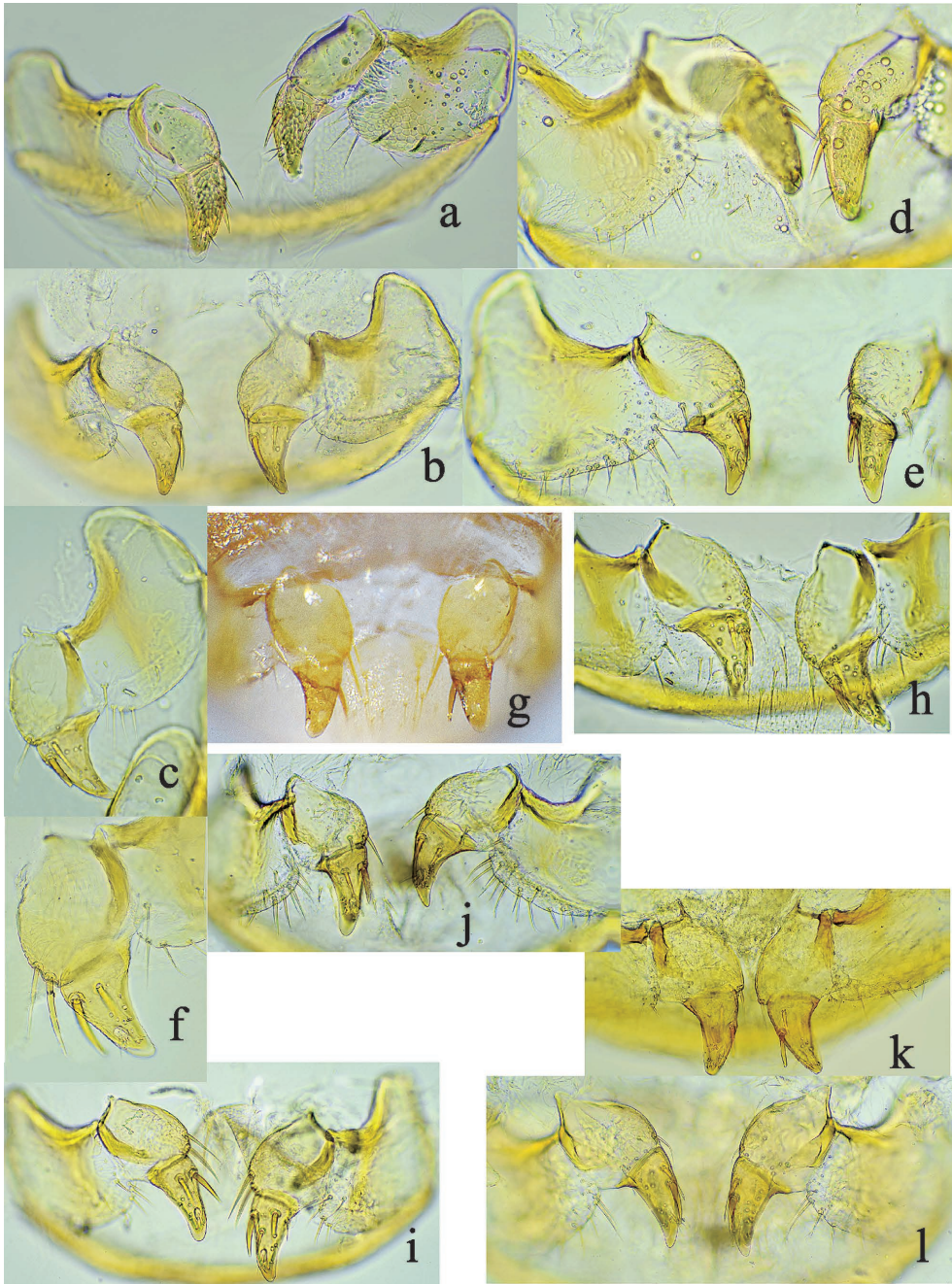


Fig. 14. Ventral view of female genitalia of the *Trechoblemus* series. — a, *Gotoblemus* (s. str.) *ii*; b, *G. (K.) gracilicornis* sp. nov.; c, *G. (K.) exilis* sp. nov.; d, *Daiconotrechus (Tsublelemus) tsushmanus* S. UÉNO; e, *Coreoblemus* sp.; f, *Stygiotrechus kubotai* S. UÉNO; g, *S. miyoshiorum* S. UÉNO of the *unidentatus* group; h, *S. miyamai* S. UÉNO; i, *S. costicollis* NAITÔ; j, *Kurasawatrechus yadai* S. UÉNO et K. KITAYAMA; k, *Ishidatrechus nitidus* S. UÉNO; l, *Suzuka masuzoi* S. UÉNO.

blance seems to be attributable to convergence, and *Aepiblemus* is distinctly recognizable by the following peculiarities in addition to the still valid two features above: developed labial sensory organ on mentum; abbreviated elytra; strongly enlarged last visible ventrite. *Daiconotrechus* s. str. is also decisively different from *Gotoblemus* s. lat. as follows: premolar tooth of right mandible fused with sharply bicuspid retinaculum; penultimate maxillary palpomere plurisetose; mentum tooth very broad and widely bifid at apex; pronotal sides without fringing ciliae⁴⁾; apical striole of elytra joining stria 3; gonocoxite of female genitalia long and very slender (Fig. 13 i); middle set of marginal umbilicate pores more widely spaced, though the fifth pore is much more widely distant from the fourth than from the sixth (i.e., spaced in much lesser degree than in *Coreoblemus*). All features above except the last are possessed in common with *Trechoblemus* GANGLBAUER, 1892 and *Oroblemus* S. UÉNO et A. YOSHIDA, 1966, therefore, *Daiconotrechus* s. str. is inferred to be belonging to the somewhat different phyletic line from that of *Gotoblemus* within the *Trechoblemus* series.

Notes on the Female Genitalia of the *Trechoblemus* Series

Within the *Trechoblemus* series, in the genera most probably closely related to *Trechoblemus*, gonocoxite is long, aculeate (Fig. 13 c–i), while in other genera including those of the *Kurasawatrechus*-Complex (cf. UÉNO, 2010) gonocoxite is subconical to unguiform of ordinary length as in *Gotoblemus* and *Stygiotrechus* (Fig. 13 j & k, Fig. 14 a–l). Few short but stout setae beset apico-internal corner of gonosubcoxite in *Trechoblemus* and *Duvaliopsis* JEANNEL, 1928 (Fig. 13 c–e). However, in *Oroblemus* and *Masuzonoblemus* S. UÉNO, 1989 gonosubcoxite is hemiglobular and entirely covered with minute short hairs; and proximal seta on the internal margin of gonocoxite is more inconspicuous than in *Trechoblemus* (Fig. 13 f–h). In *Coreoblemus* and *Tsuiblemus* of the genus *Daiconotrechus* internal margin of gonosubcoxite is either asetose or bears only one weak seta near the apico-internal corner (Fig. 13 j & k, Fig. 14 d & e), whereas in the genera of the *Kurasawatrechus*-Complex (Fig. 14 j–l) internal margin of gonosubcoxite possesses one moderate-sized seta as in *Gotoblemus*.

Key to the Genera and Subgenera Related to *Gotoblemus*⁵⁾

- 1 Apical margin of labrum deeply or moderately incised in V-shape; ultimate maxillary palpomere very short, subconical with blunt apex, rather weakly and regularly narrowed apicad, and pubescent with minute hairs; genae very broad and rather strongly, sometimes extraordinarily, prominent laterad, but rather depressed dorsally; external face of protibia distinctly and widely grooved. 2
- Apical margin of labrum usually shallowly, rarely hardly emarginate (if rather deeply emarginate, central portion of apical margin slightly arcuate or subparallel to basal border); ultimate maxillary palpomere glabrous, usually thin and elongated at the apical portion (if subconical, usually only a little more strongly attenuate apicad than in the item

4) It is worth noting that in some specimens of *D.* (s. str.) *iwatai*, humeral margins are faintly and extremely minutely serrulated, and extremely minute vestigial ciliae are rarely present on pronotal sides.

5) As for Chinese genera except *Duvalioblemus* (s. str.), *Masuzonoblemus*, *Laoblemus*, *Wulongoblemus*, and *Microoblemus* accounts of the character states in this key are given solely on the basis of the original descriptions, thus, they might be unreliable in some points.

- above, and at least glabrous); genae feebly, moderately, or well convex, at least less prominent than in the item above; external face of protibia either simple or relatively narrowly and shallowly grooved (if rather widely subsulcate or flattened, not distinctly grooved). 3
- 2 (1) Proximal cusp of retinaculum, which is fused with premolar, smaller than the distal one, but distinct in right mandible; labium completely fused; humeral margin without serrulation. *Duvalioblemus* (s. str.) DEUVE, 1995⁶⁾
- Proximal cusp of retinaculum, which is fused with premolar, practically reduced in right mandible; mentum free; humeral margin serrulated. *Duvalioblemus* (*Yunnanoblemus*) DEUVE, 2014
- 3 (1) Penultimate maxillary palpomere plurisetose, usually forming whorl of setae; mentum tooth very broad and widely bifid at apex; apical recurrent striole usually distinct and joining or nearly joining stria 3 (rarely directed to stria 5); gonocoxite of female genitalia long and very slender. 4
- Penultimate maxillary palpomere without conspicuous setae, even if more or less pubescent; mentum tooth narrower; apical recurrent striole usually directed to stria 5, sometimes directed to or joining stria 6 or 7 (joining stria 3 in certain taxa), sometimes so obscure as to determine its direction; gonocoxite of female genitalia ordinary as far as Japanese and Korean genera concerned (unknown for most of the Chinese genera). 6⁷⁾
- 4 (5) Copulatory piece of male genitalia anisotopic. *Daiconotrechus* (s. str.) S. UÉNO, 1971
- Copulatory piece of male genitalia isotopic (in dorsal/ventral position). 5
- 5 (4) Apical recurrent striole nearly joining stria 3 (or stria 5); each elytral interval irregularly densely pubescent or with one or two row(s) of pubescence; endemic to northern Japan. ... *Oroblemus* S. UÉNO et A. YOSHIDA, 1966
- Apical recurrent striole more distinctly joining stria 3; each elytral interval with one (partially two) row(s) of pubescence; eyes more reduced; apical portion of copulatory piece more strongly dilated; endemic to Taiwan. *Masuzonoblemus* S. UÉNO, 1989
- 6 (3) Each elytron with three discal setae (apart from preapical one), third seta on stria 5 (or interval 5). *Laoblemus* S. UÉNO, 2006
- Each elytron with two discal setae (apart from preapical one). 7
- 7 (6) Second elytral discal seta on interval 5; mentum free. *Graciliblemus* DEUVE et TIAN, 2016
- Elytral interval 5 without discal setae; labium fused or not. 8
- 8 (7) Second elytral discal seta on interval 4; labium completely fused. 9⁸⁾
- Second elytral discal seta on stria 3; labium fused or not. 11

6) This genus is supposed to be related to *Aepiblemus* BELOUSOV et KABAK, 1993 (DEUVE, 1995, 2014; S. UÉNO & Zhao, 1997; BELOUSOV & KABAK, 2003).

7) *Oroblemites* S. Uéno et Pawłowski, 1981, with pubescent eyes, hexasetose submentum, pubescent apical maxillary palpomere, and anisotopic copulatory piece, is supposed to be related to *Oroblemus*, but the writer has been unable to examine the female genitalia of this genus.

8) In *Masuzonoblemus*, *Oroblemus* and *Trechoblemus* first or second (especially in the last genus) elytral discal seta is frequently positioned on interval 4 (BARR, 1971, p. 143; GANGLBAUER, 1891; JEANNEL, 1928, pp. 100, 102; S. UÉNO, 1989; S. UÉNO & A. YOSHIDA, 1966).

- 9 (8) Fifth pore of marginal umbilicate series nearer to fourth than to sixth; pubescence on elytra rather reduced. *Cimmeritodes (Xiangcimmerites)* DEUVE et TIAN, 2016
 — Fifth pore of marginal umbilicate series nearer to sixth than to fourth. 10
- 10 (9) Distance between two pores of middle set obviously larger than that between third and fourth, mentum tooth large and rounded at apex; protibia indistinctly externally grooved. *Cimmeritodes (Zhecimmerites)* DEUVE et TIAN, 2015
 — Distance between two pores of middle set as large as that between third and fourth; mentum tooth narrower; protibia without external groove. 10'
- 10' (10) Smaller (less than 4.5 mm in length); sides of pronotal basal parts without particular protuberance before hind angles. *Cimmeritodes* (s. str.) DEUVE, 1996⁹⁾
 — Larger (more than 5 mm in length); sides of pronotal basal parts with a small denticle before hind angles. *Dongoblemus* DEUVE et TIAN, 2016
- 11 (8) Fifth pore of marginal umbilicate series nearer to fourth than to sixth (or at least fifth pore near the midpoint between fourth and sixth). 12
 — Fifth pore of marginal umbilicate series obviously nearer to sixth than to fourth. 14
- 12 (11) Almost all hairs on dorsal surface of fore-body can be regarded as setae; a pair of frontal setae adjoining or nearly adjoining frontal furrows; submentum usually heptasetose or octosetose; humeral sides without denticles; protarsomere 1 remarkably, at least distinctly, dilated in both sexes. 13 ··
 — Most hairs on dorsal surface of fore-body cannot be regarded as setae, though fairly long; without distinct frontal setae; submentum decemsetose with accessory two setae on posterior parts of mentum; humeral sides with large denticles; male protarsomere 1 (and 2) weakly dilated. *Microblemus* S. UÉNO, 2007¹⁰⁾
- 13 (12) Oblique groove for receiving the hind angle of pronotum present on each elytral basal parts; recurrent striole joining, though faintly, stria 3; setae on dorsal surface of fore-body prevailing; mentum tooth rather slender with simple nearly truncated apex; male protarsomeres 1 and 2 with remarkably large apical projection inwards.
 *Daiconotrechus (Tsuiblemus)* S. UÉNO, 2007
 — Elytral basal parts without oblique groove; recurrent striole directed to the site of putative stria 5; setae on dorsum of fore-body present on restricted region; mentum tooth shorter and acutely pointed at apex; male protarsomere(s) 1 (or 1 and 2) with moderate-sized apico-internal spur. *Coreoblemus* S. UÉNO, 1969
- 14 (11) Premolar tooth of right mandible fused with retinaculum; anterior margin of labrum hardly emarginate. 15
 — Right mandible tridentate; anterior margin of labrum variable (usually slightly emarginate). 16

9) This genus is originally described as a subgenus of *Gotoblemus*.

10) In the type species of this genus short shelf-like process is present on each side of minute scutellum (S. UÉNO, 2007 b, fig. 4). (Fig. 10)

- 15 (14) Labial suture visible throughout, though vestigially; submentum heptasetose; genal setae absent; protibia without external groove. *Cimmeritodes (Dianocimmerites)* DEUVE et TIAN, 2016¹¹⁾
- Labium completely fused; submentum decemsetose. *Wanoblemus* TIAN et FANG, 2016
- 16 (14) Penultimate labial palpomere bisetose; dorsal surface of head except on genae glabrous. ... 17
- Penultimate labial palpomere quadrisetose; dorsal surface of head pubescent. 18
- Penultimate labial palpomere trisetose; dorsal surface of head with very short hairs; each humeral sides with a large denticle whose anterior margin is serrulated; shallow incomplete oblique groove present on each elytral base. *Wulongoblemus* S. UÉNO, 2007
- 17 (16) Habitus elongate; frontal furrows interrupted by large pit; mentum tooth simple; submentum octosetose; pronotal discal hairs of subequal length; elytral lateral margin finely serrulated throughout. *Sidublemus* TIAN et YIN, 2013¹²⁾
- Habitus robust: frontal furrows complete; mentum tooth bifid; submentum heptasetose; pronotal discal hairs longer near apex and on each side of mid-line; serrulation of elytral lateral margin more pronounced in anterior half. *Sinocimmerites* DEUVE, 2007
- 18 (16) Conspicuous pre-ocular cicatrix present on each side of head; submentum hexasetose; elytra entirely, rather irregularly pubescent, though pubescence is more or less in lines. *Balazucellus* DEUVE, 2001¹³⁾
- Vestiges of eyes inconspicuous; submentum usually heptasetose or octosetose; each elytral interval with a row of pubescence. 19
- 19 (18) Pronotum usually with differentiated discal setae; humeral margins with distinct, even if very obtuse, serrae or denticles (if serrae are very obtuse, both suprafrontal and pronotal discal setae are distinct); usually moderately depigmented and brownish except for *unidentatus*-group; male protarsi with proximal two dilated segments, or without dilated segment. *Stygiotrechus* S. UÉNO, 1958
- Pronotum without differentiated discal setae; humeral margin without distinct serrae nor denticles; integument entirely pale yellowish or two-tone with reddish fore-body. 20
- 20 (19) Anterior margin of labrum hardly emarginate; labium completely fused; male protarsi with a single dilated segment. *Gotoblemus* (s. str.) S. UÉNO, 1970
- Anterior margin of labrum only slightly emarginate; labium incompletely fused; male protarsi with two dilated segments. *Gotoblemus (Kamigotoblemus)* NAITÔ, subgen. nov.

11) Concerning the original account of *Dianocimmerites*, following two points are to be noted: the condition of scutellum is not described; the arrangement of the middle set of marginal umbilicate pores is described as “la 1^{re} soie [médiane] peine plus éloignée de la 4^e soie humerale que de la 2^{de} soie médiane” and “les deux soie [médiane] assez espacées l’une de l’autre”, but in habitus two pores of middle set are represented as closely located to each other (DEUVE & TIAN, 2016, pp. 346–347, fig. 3).

12) The arrangement of humeral set of marginal umbilical pores is somewhat unclear in *Sidublemus*; in the original account humeral set is described as “nearly regular”, but, judging from the habitus of the type species, distances between each pore of humeral set seem to be increasing posteriorly (TIAN & YIN, 2013, p. 163).

13) Position of this genus is only tentative, since the condition of palpi is not described (DEUVE, 2001, p. 46).

Gotoblemus (Kamigotoblemus) gracilicornis NAITÔ, sp. nov.

(Figs. 1 b–c, 2 b–c, f–g, 3 a–c, 7 & 14 b)

Type material. Holotype: ♂ (NSMT), 1.V. 2016, T. NAITÔ leg. Paratypes: 1 ♂, same locality as the holotype, 15.IV.2012, T. NAITÔ leg.; 2 ♀♀, same locality, 18.IV.2015, T. NAITÔ leg.

Type locality. Nanamé-gô, 130 m in altitude, northern foot of Yagura-daké Mountain on Nakadôri-jima Island of the Gotô Islands, Shin-kamigotô-chô, Nagasaki Prefecture, western Japan.

Diagnosis. Larger species of the subgenus with slender appendages. Readily distinguished from *Gotoblemus* (s. str.) *ii* S. UENO (1970, p. 619, figs. 7–11) by stouter body with shorter appendages, more reddish fore-body, more evenly convex genae, obtuser teeth of mandibles, and more widely truncated apex of aedeagal tube, as well as by the other diagnostic features of the new subgenus.

Description. Length (from apical margin of clypeus to apices of elytra): 2.27–2.99 mm. Body elongate and constricted between prothorax and elytra; anophthalmic, apterous, and depigmented. Colour (in dried specimen): head and pronotum light reddish brown, palpi, antennae except for proximal few segments, which are reddish, elytra, ventrites, and legs except for profemora, which are somewhat reddish, pale yellowish brown (in the holotype labrum is translucent on each side); concolorously translucent pale yellowish brown when alive, though fore-body is somewhat darker than hind one.

Head very large, rather elongate, though slightly wider than long; HW/HL 1.15–1.23 (M 1.18), widest at the middle of genae and equally narrowed both in front and behind; neck constriction very shallow even at the sides; genae gently evenly convex, and sparsely covered with erect hairs; frons and supraorbital areas weakly convex, though slightly depressed on dorsum, sparsely covered with rather stout somewhat recumbent hairs; microsculpture distinct, composed of isodiametric meshes which become larger on vertex; mandibles relatively slender but short, rather weakly arcuate and hooked at apices; mental tooth as in subgeneric account, but in one specimen only the left side is imperfectly edged, and slightly asymmetrically cleft near apex; antennae filiform, always exceeding the middle of elytra in both sexes, reaching basal 10/19–13/20 of elytra; pedicel the shortest, a little shorter than and about five-sevenths as wide as scape, segment 3 about 1.25 times as long as pedicel, segments 3–10 each subequal in both length and width, nearly or more than three times as long as wide, though usually segments 8–10 each relatively short, usually terminal segment the longest, about 1.28 times as long as segment 10, about 1.08 times as long as segment 5.

Pronotum proportionally small, more transverse than in *G.* (s. str.) *ii*, subcordate to subtrapezoidal, strongly contracted basad, wider than head, obviously wider than long, widest at about apical three-tenths, and more gradually narrowed anteriorly than posteriorly; PW/HW 1.12–1.16 (M 1.15), PW/PL 1.11–1.16 (M 1.14), PW/PA 1.20–1.24 (M 1.22), PW/PB 1.50–1.54 (M 1.52); dorsum well convex, steeply declivous at the antero-lateral area, wholly covered with rather long stout hairs; discal setae indistinguishable as in *Gotoblemus* (s. str.) *ii*; microsculpture composed of isodiametric meshes and sometimes partially coarse; sides narrowly bordered and fringed with ciliae which are rather vestigial, moderately arcuate near front angles, a little less so behind the widest parts, somewhat indistinctly sinuate at about one-fifth to one-seventh from base, then becoming subparallel or slightly divergent towards hind angles; faintly and minutely indented along the sinuated lateral margins; apex nearly straight or slightly arcuate, much wider than base; PA/PB 1.24–1.27 (M 1.26); front angles very widely rounded and hardly advanced; base very slightly emarginate at middle and obliquely subtruncated just inside each hind angle, which is subrectangular or a little obtuse; anterolateral setae located a little before the widest parts, postangular setae a little removed forwards from the angle; median line shallow, not reaching apex, though distinct behind middle, and deepened near base; apical transverse impression obsolete, basal one continuous, merging on each side into basal foveae, which

are small but rather deep; basal area narrow, uneven and obliquely rugulose; postangular carinae not formed; basal margin rather smooth at middle, and not indented unlike *Stygiotrechus*.

Elytra oblong-oval, shorter than those of *G. (s. str.) ii*, much wider than pronotum, obviously longer than wide, widest only a little behind middle; EW/PW 1.47–1.51 (M 1.50), EL/PL 2.66–2.71 (M 2.69), EL/EW 1.56–1.63 (M 1.58); dorsum moderately convex, though slightly depressed on disc along suture; shoulders distinct though rounded, prehumeral margins feebly arcuate and oblique to the mid-line (less oblique than in *G. (s. str.) ii*); prehumeral borders anteriorly extending to near the base of stria 5 with anterior termination briefly curving round inwards, marginal gutter also extending anteriorly to the anterior end of prehumeral border and widened before the second pore of umbilicate series as in *G. (s. str.) ii*; sides narrowly bordered and ciliated, very slightly divergent from behind shoulders to the widest parts nearly in straight lines, then feebly arcuately convergent to near apices, which are rather widely, separately rounded, forming obtuse re-entrant angle at suture; striae superficial and finely punctate, a little more distinctly impressed in female, striae 1–3 nearly entire and more or less deepened near base, but seemingly somewhat fragmented due to slight unevenness of intervals, stria 4 usually slightly undulate and partially evanescent, but sometimes nearly entire, stria 5 nearly obsolete or partially visible near base, at middle, and near apical end, stria 6 and 7 obliterated, stria 8 usually traceable around the apical set of marginal umbilical pores; scutellar striole rather mal-defined; apical recurrent striole moderately arcuate, and directed anteriorly to the site of stria 5; intervals faintly convex and somewhat uneven; apical carina short, more obtuse than in *G. (s. str.) ii*; two discal setae located on each stria 3 at about 1/5–2/7 and 1/2 from base, respectively; preapical pore much more distant from apex than from suture, and slightly nearer to apical striole than to suture as in *G. (s. str.) ii*; microsculpture consist of fine polygonal meshes.

Ventral surface largely pubescent, with a pair of paramedian setae on each ventrite. Legs shorter and stouter than in *G. (s. str.) ii*; mesotibia nearly three-eighths as long as elytra; metatibia a little shorter than a half of elytra; protibia a little longer than one-third of elytra, only feebly incurved and slightly dilated apicad; mesotarsal segment 1 as long as segments 2–3 combined; metatarsal segment 1 about as long as, or a little shorter than segments 2–4 combined. Other features are as in subgeneric account.

Male genital organ (Figs. 3 a–c) basically similar to that of *G. (s. str.) ii*, very small and lightly sclerotised. Aedeagus only one-fifth as long as elytra, compressed, and rather weakly arcuate at middle with dorsal margin unevenly curved in profile; basal part not very voluminous, strongly bent ventrad, lateral sides of basal orifice only slightly emarginate; sagittal aileron narrowly but rather strongly produced ventro-proximad; in lateral view, middle portion of aedeagal tube slightly dilated apicad to the base of apical orifice, then gradually narrowed apicad to the base of apical lobe with dorsal margin of apical orifice nearly straight, apical lobe decurved, briefly subparallel, then dilated into widely truncated extremity; ventral margin gently emarginate in profile; in dorsal view, aedeagal tube fairly slender, nearly straight, though apical portion is inclined to the left toward the base of apical lobe, which is more strongly curved to the left and widely truncated at the extremity. Inner sac armature as a whole seemingly subtriangular tapering apicad, but mostly composed of two nested spatulate sclerites whose surfaces are loosely covered with transparent scales. Styles rather elongate, wider than those of *G. (s. str.) ii* in apical portions; left style a little longer than the right, each with four apical setae, of which subdorsal one is longer than the other three, and somewhat curled near apex.

Bionomics. Type locality of this important new species is situated on the northernmost island of major five islands of Gotô (“Gotô” means “five islands” in Japanese); it is about 52.5 km distant to the northeast from the I-ana Caves, the type locality of *G. (s. str.) ii*. In the type locality *G. (Kamigoto-blemus) gracilicornis* coexists with *G. (K.) exilis* to be described on later pages. However, habitat seg-

regation was observed between them. *Gotoblemus (K.) exilis*, which is very minute species, was usually found clinging to the undersurface of stones embedded in the ground of small side gully at a depth about 20–50 cm. In contrast to this, ordinary microhabitat of *G. (K.) gracilicornis* seemed to be located around the groundwater table; delicate trechines were found resting on the wet upper surface of stones placed in narrow interstices extending under the thick impermeable layer of clay at a depth about 100 cm; they ran fast, when disturbed. However, a single individual was found at the bottom of the thick gravel layer after a heavy rain.

Etymology. Specific epithet is given in reference to the slender antennae of this species.

***Gotoblemus (Kamigotoblemus) exilis* NAITÔ, sp. nov.**

(Figs. 1 d, 2 d–e, 3 d–e, 4 b & 14 c)

Type material. Holotype: ♂ (NSMT), 15.IV.2012, T. NAITÔ leg. Paratypes: 5 ♂♂, 3 ♀♀, same data as the holotype; 1 ♀, same locality, 12.IV.2012, T. NAITÔ leg.; 2 ♂♂, 3 ♀♀, same locality, 13.IV.2012, T. NAITÔ leg.; 2 ♂♂, 2 ♀♀, same locality, 1.V.2016, T. NAITÔ leg.

Type locality. Nanamé-gô, 130 m in altitude, northern foot of Yagura-daké Mountain on Nakadôri-jima Island of the Gotô Islands, Shin-kamigotô-chô, Nagasaki Prefecture, western Japan.

Further specimens examined. 1 ♀, Aiko-gô, 150 m alt. southern foot of Mt. Yagura-daké, on Nakadôri-jima Island, Shin-kamigotô-chô, 29.IV.2016, T. NAITÔ leg.; 4 ♂♂, 3 ♀♀, Nishi-kônoura-gô, 150 m alt., north-western foot of Mt. Tenjin-yama on Wakamatsu-jima Island, Shin-kamigotô-chô, 17.IV.2015, T. NAITÔ leg.; 3 ♂♂, 1 ♀, Hiyodorigoé, 100 alt., Naru-machi, on Naru-shima Island, Gotô-shi, 12.IV. 2015, T. NAITÔ leg. All localities are in Nagasaki Prefecture, western Japan.

Diagnosis. Smaller species of the subgenus with shorter appendages.

Description. Length (from apical margin of clypeus to apices of elytra): 1.97–2.22 mm. The smallest species of Japanese blind trechini as well as *Stygiotrechus miyamai* S. UÉNO, 2009 (Fig. 4). Body elongate, more distinctly parallel-sided than in type species of subgenus, yet constricted between fore- and hind-body. Colour in dried specimen basically similar to that of *Gotoblemus (Kamigotoblemus) gracilicornis* excepting that fore-body is less reddish, antennae are wholly yellowish brown including basal segments, and profemora is more yellowish. Microsculpture wholly composed of polygonal meshes except in pronotal basal parts where meshes become granular.

Head subquadrate, more transverse, with widest parts more posteriorly positioned than in *G. (K.) gracilicornis*; HW/HL 1.23– 1.42 (M 1.34); widest a little behind the middle of genae; neck very wide, marked by shallow constriction; frontal furrows as in *G. (K.) gracilicornis* but more widely distant from each other; genae more tumid in posterior parts and covered with sparse erect pubescence, each usually with a temporal seta; disposition of hairs and setae on dorsum similar to that of *G. (s. str.) ii*, a pair of frontal and a pair of suprafrontal setae usually discernible in fronto-vertexal area among the relatively long suberect hairs; supraorbital areas pubescent, supraorbital setae frequently supplemented with weaker accessory setae inserted around the ordinary two pairs, a shorter additional seta constantly present on each side diagonally (inwardly) to the front of anterior supraorbital seta at the level a little behind the frontal setae; mandibles somewhat more rapidly attenuate, and a little more strongly arcuate than in *G. (K.) gracilicornis*; submental setae seven to nine in number, but almost always seven; antennae submoniliform and rather weakly dilated apicad, usually reaching basal one-fourth to three-tenths of elytra in male, barely reaching basal one-fourth of elytra in female; pedicel usually a little shorter than scape, and a little longer than segment 3; segment 4 the shortest; segments 5–10 each subequal in length; usually terminal segment the largest, though not much larger (or even sometimes smaller) than scape. Other cephalic features are as in the subgeneric account.

Pronotum very similar in configuration to that of the type species of subgenus, but a little more transverse, widest at about three-fourths from base, more gradually narrowed apicad than basad; PW/HW 1.12–1.17 (M 1.15), PW/PL 1.20–1.29 (M 1.24), PW/PA 1.16–1.28 (M 1.21), PW/PB 1.46–1.51 (M 1.49); sides narrowly bordered, and a little more conspicuously ciliated than in *G. (K.) gracilicornis*, more gently arcuate in apical seven-ninths, more distinctly and widely sinuate in basal one-sixth to two-ninths than in *G. (K.) gracilicornis*, faintly indented in basal one-fifth to one-sixth; hind angles subrectangular; two lateral setae present as in *G. (K.) gracilicornis*; apex nearly straight or slightly emarginate with front angles widely rounded and hardly advanced; base obviously narrower than apex; PA/PB 1.16–1.26 (M 1.23); nearly straight or slightly emarginate at middle, a little less obliquely emarginate on each side inside hind angles than in *G. (K.) gracilicornis*; dorsum moderately convex, steeply declivous in antero-lateral area, dorsal pubescence a little more variable in length than in *G. (K.) gracilicornis*, median line not reaching the apex but deepening basad; apical transverse impression nearly obsolete though slightly wrinkled, basal one continuous, usually with oblique wrinkles on each side of median line; basal area more even than in *G. (K.) gracilicornis* with somewhat shallower basal foveae; postangular carinae absent.

Elytra oblong-oval, very similar in many respect to those of *G. (K.) gracilicornis* but more parallel-sided, and proportionally narrower (in contrast to fore-body); widest a little behind middle, and fairly broad even near apices; EW/PW 1.32–1.39 (M 1.35), EL/PL 2.66–2.78 (M 2.72), EL/EW 1.58–1.69 (M 1.61); dorsum more or less convex in marginal areas but rather strongly and widely depressed on disc; scutellar area seemingly raised due to the slight depression existing on each side; shoulders more distinct than in *G. (K.) gracilicornis* with prehumeral margins nearly perpendicular to the mid-line; sides finely bordered and ciliated from near the base of stria 5 to the level of the eighth pore of umbilicate series, feebly arcuately divergent from behind shoulders to the widest parts, then becoming subparallel, and again more feebly convergent towards apices, which are very widely and separately rounded, leaving very obtuse re-entrant angle at suture; serrulation of lateral margin usually only slightly pronounced at the sides of humeral parts unlike *G. (K.) gracilicornis*; marginal gutters extending anteriorly to the slightly incurved anterior termination of prehumeral borders and rather suddenly widened before the second pore of umbilical series; striae as in *G. (K.) gracilicornis* but somewhat divergent posteriad; scutellar striole longer and more clearly impressed than in *G. (K.) gracilicornis*; apical striole short and incurved, directed to the site of stria 5; intervals faintly convex on disc but flat near sides, each with a row of erect pubescence of which on interval 8 is rather strengthened; apical carina obtuse; stria 3 with two setiferous discal pores located at about 2/9–1/4 and 5/9–3/5 from base, respectively; preapical pore only a little more widely distant from apex than from suture and closer to apical striole than to suture; marginal umbilicate pores as in subgeneric account.

Ventral surface as in *G. (K.) gracilicornis*. Legs shorter and stouter than in *G. (K.) gracilicornis*; mesotibiae a little shorter than one-third of elytra; metatibiae a little shorter than three-sevenths of elytra; mesotarsal segment 1 shorter than segments 2–3 combined; metatarsal segment 1 usually as long as or a little longer than segments 2–3 combined.

Male genital organ (Figs. 3 d–e) rather lightly sclerotised, basically similar to that of *G. (K.) gracilicornis*. Aedeagus about one-fourth as long as elytra, proportionally longer and more regularly arcuate in profile than in *G. (K.) gracilicornis* with more weakly spatulate apical parts; viewed laterally basal part less strongly bent ventrad, and more indistinctly truncated at apex than in *G. (K.) gracilicornis*, without apical dilatation; in dorsal view, much wider, and apical lobe more weakly curving to the left than in *G. (K.) gracilicornis*. Inner sac armature similar to that of *G. (K.) gracilicornis*. Styles moderate-sized, left one a little longer than the right, each provided with four apical setae.

Bionomics. In Hiyodorigoé and Aiko-gô sites *G. (K.) exilis* coexists with an undescribed species

of *Stygiotrechus*, whereas topotypical population of *G. (K.) exilis* coexists with *G. (K.) gracilicornis* as mentioned in Bionomics article under the description of the latter species. When syntopic with *Stygiotrechus*, microhabitat of *G. (K.) exilis* seemed to be limited under that of *Stygiotrechus*. In such a case only an isolated individual of *G. (K.) exilis* was found running on the wet surface of bed rock underlying the habitat of *Stygiotrechus*.

Etymology. Specific epithet indicates the tiny body of this new species.

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要 約

内藤隆夫：五島列島から発見されたアトスジチビゴミムシ属群（鞘翅目オサムシ科チビゴミムシ亜科）の盲目性チビゴミムシの新種。——長崎県西沖の五島列島上五島地域から、ゴトウメクラチビゴミムシ属の2新種カミゴトウメクラチビゴミムシ（新称）*Gotoblemus gracilicornis* sp. nov., およびウスメクラチビゴミムシ（新称）*G. exilis* sp. nov. を記載した。これら2種は、下唇基節と亜基節が完全には融合せず、雄前附節は基部2節が拡張する点で属模式種と大きく異なることから新亜属 *Kamigotoblemus* を設けそこに含めた。カミゴトウメクラチビゴミムシは体長や体型、細い付属肢、下唇歯の形態、強く裁断状の雄交尾器中央片先端の形状で属模式種に似る一方、ウスメクラチビゴミムシは非常に微小な種で、付属肢は短く、下唇歯の形態が異なり、雄交尾器の類似性も不明瞭である。しかし、両種とも色素消失の度が進み、前胸背板に分化した剛毛が認められず、上翅側縁は全体に極めて弱く鋸歯状で肩部にも明瞭な突起を欠き、上翅条溝は浅く退化的な点などで一致しており、分布状況をも考慮すると同じ系統のものと考えざるを得ない。新亜属を含めたゴトウメクラチビゴミムシ属は近縁属からの相違点が微妙で、その取扱いは難しいものとなる。その詳細な検討は本文に譲るが、日本産種との関わりでは、現在ノコメクラチビゴミムシ属 *Stygiotrechus* に含まれているツツガタメクラチビゴミムシ *S. unidentatus* が、同属の種の中では特に、本稿で記載した新亜属の種に強い類縁性を示すことは注目に値する。

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