

REVIEW OF THE ASIAN MIRINE GENUS *TOLONGIA* (HETEROPTERA : MIRIDAE)⁽¹⁾

Frédéric CHÉROT^(*)⁽²⁾, Tomohide YASUNAGA^(**) & Olivier S. G. PAUWELS^(*)

(*) Laboratoire de Systématique et d'Ecologie animales, Université Libre de Bruxelles, C.P. 160/13, av. F.-D. Roosevelt 50, B - 1050 Brussels, Belgium. [e-mail : fcherot@ulb.ac.be]

(**) Biological Laboratory, Hokkaido University of Education, Ainosato 5-3-1, Sapporo, 002 Japan.
[e-mail : yasunaga@atson.sap.hokkyodai.ac.jp]

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Abstract. – The mirine plant bug genus *Tolongia* Poppius, 1915 is redefined. The following new synonymies are established: *Tolongia* Poppius, 1915 = *Gressittmiris* Carvalho, 1988, **syn. n.** = *Exopantilus* Yasunaga, 1991, **syn. n.** A new species, *T. kerzhneri*, from Indonesia and Malaysia is described. The redescription of the external morphology and the description of the genital structures for both sexes of *T. marginicollis* Poppius, 1915 are also given. The genitalia of the male of *T. pilosa* (Yasunaga, 1991), **comb. n.** are redescribed, and those of the female are described; this species is newly recorded from India. The male genitalia of *T. gressitti* (Carvalho, 1988), **comb. n.** are partially redescribed. A key is provided to distinguish the four known species, and the relationships of *Tolongia* are briefly discussed.

Résumé. – Révision du genre asiatique *Tolongia* (Heteroptera : Miridae). – Le genre *Tolongia* Poppius, 1915 est redéfini. Les synonymies suivantes sont établies : *Tolongia* Poppius, 1915 = *Gressittmiris* Carvalho, 1988, **syn. n.** = *Exopantilus* Yasunaga, 1991, **syn. n.** Une nouvelle espèce, *T. kerzhneri* d'Indonésie et de Malaisie, est décrite. Une redescription de l'anatomie externe et la description des genitalia des deux sexes de *T. marginicollis* Poppius, 1915 sont fournies. Les genitalia du mâle de *T. pilosa* (Yasunaga, 1991), **comb. n.** sont redécrits et ceux de la femelle décrits; l'espèce est par ailleurs nouvellement signalée d'Inde. Les structures génitales du mâle de *T. gressitti* (Carvalho, 1988) **comb. n.** sont brièvement analysées. Une clé des quatre espèces connues est proposée et les relations phylétiques du genre *Tolongia* évoquées.

The generic and suprageneric classification of the tribe Mirini remains unsatisfactory (STONEDAHL, 1995; CHÉROT, 1996; CHÉROT & SCHWARTZ, 1998). Many genera are insufficiently defined, many imaginal structures are yet to be described (e.g. the female genitalia), and the intergeneric phylogenetic relationships from previous works are generally ignored.

To improve our understanding of relationships between the monobasic genus *Tolongia* Poppius, 1915 and closely related taxa, we propose additional diagnostic characters for the genus, with redescription of the external morphology of *T. marginicollis* Poppius, 1915, the description of the genital structures for both sexes of this species, redescriptions of the male genital structures of *T. pilosa* (Yasunaga, 1991), **comb. n.** and *T. gressitti* (Carvalho, 1988),

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comb. n., and the description of the female genital structures of *T. pilosa*. *T. kerzhneri*, sp. n. from Indonesia and Malaysia, is also described and figured. The presumed diagnostic characters for each species are summarised in a key. The species concept used in this work is the "theoretical framework of null hypothesis" *sensu* COLE (1990).

Material and methods

The depositories of the specimens examined are abbreviated as follows :

AMNH	American Museum of Natural History, New York, U.S.A.;
BMNH	Natural History Museum, London, England;
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.;
HUES	Biological Laboratory, Hokkaido University of Education, Sapporo, Japan;
MNHA	Museum of Nature and Human Activities, Hyogo, Japan;
MZHF	Zoological Museum, University of Helsinki, Helsinki, Finland;
NSMT	National Science Museum, Tokyo, Japan;
ULB	Université Libre de Bruxelles, Brussels, Belgium;
USNM	United States National Museum of Natural History, Smithsonian Institution, Washington DC, U.S.A.

The terminology of the genital structures, with slight modifications, follows SLATER (1950), DAVIS (1955), KELTON (1959) and STONEDAHL (1988). The following abbreviations are used: *ACH*: basal and sclerotized processes *sensu* STONEDAHL (1988) combined; *B structure*: B structure *sensu* SLATER (1950) (or sigmoid process *sensu* DAVIS, 1955) + C structure *sensu* SLATER (1950); *PMS*: phallic primary membranous sac *sensu* STONEDAHL (1988).

All measurements in the text and tables are given in millimetres, and the following abbreviations are used :

<i>H.te.</i>	height of head in lateral view;	<i>L.s.</i>	mesal length of scutellum (mesoscutum excluded);
<i>H.y.</i>	height of eyes in lateral view;	<i>l.s.</i>	anterior width of scutellum;
<i>Lab.</i>	medial length between the anterior margin of the pronotal collar and the posterior margin of the callosities;	<i>L.s.c.</i>	length of clavo-corial suture;
<i>L.A.</i>	length of the hemelytra;	<i>L.t.</i>	total length from top of head to posterior apex of membrane in dorsal view
<i>L.a.</i>	abdominal length in lateral view;	<i>L.t.</i>	(WAGNER & WEBER, 1964);
<i>L.a1. - L.a4.</i>	length of antennal segments 1 to 4;	<i>L.t.a1. - L.t.a3.</i>	maximum width in dorsal view;
<i>L.c.</i>	length of cuneus;	<i>L.t.a1. - L.t.a3.</i>	lengths of metatarsomeres 1 to 3, respectively;
<i>l.c.</i>	width of cuneus;	<i>L.te.1.</i>	length of head as defined by WAGNER & WEBER (1964);
<i>L.m.</i>	length of metafemur;	<i>l.v.</i>	vertex width in dorsal view;
<i>Laap.</i>	mesal length of pronotal collar;	<i>l.y.</i>	eye width in dorsal view.
<i>L.p.</i>	mesal length of pronotum;		
<i>l.p.</i>	posterior width of pronotum;		
<i>L.r.</i>	length of rostrum;		

Concerning the labels, FC n° is Chérot's specimen identification number; the semicolon separates the specimens and the slash separates the labels of a particular specimen.

Genus *TOLONGIA* Poppius, 1915

Tolongia Poppius, 1915 : 55 (as new genus) (type species by original designation: *Tolongia marginicollis* Poppius, 1915); CARVALHO, 1952 : 93 (catalog); CARVALHO, 1959 : 268 (catalog); SCHUH, 1995 : 965 (catalog) (3); *Gressittmiris* Carvalho, 1988 : 217 (as new genus) (type species by original designation: *Gressittmiris gressitti* Carvalho, 1988), *syn. n.*; SCHUH, 1995 : 772 (catalog) (4); *Exopantilius* Yasunaga, 1991 : 122 (as new genus) (type species by original designation: *Exopantilius pilosus* Yasunaga, 1991), *syn. n.*; SCHUH, 1995 : 769 (catalog); KERZHNER & JOSIFOV, 1999 : 100 (catalog).

(3) In his catalog, SCHUH (1995) incorrectly cites "*T. multinotatus* Poppius, 1915" as type species of *Tolongia*, owing to a computer error.

(4) SCHUH (*loc. cit.*), owing to an inadvertent error, cites *Gryllocoris angusticollis* Baerensprung, 1859, a junior synonym of the well-known *Aphanosoma italicum* Costa, 1842, as a species of *Gressittmiris*.

Diagnosis. — Large, elongate and somewhat flattened mirines (figs. 33, 35). *Head.* Lora, genae and narrow juga elongate; angulus facialis close to 90°. Platelike process of lora absent. Antenniferous tubercles prominent, ventrally elongate. Eyes elongate, oblique, depressed. Frons oblique to horizontal, more or less convex, its pilosity semierect and relatively rigid. Vertex bearing a posterior callus (but not strictly margined basaly); with a relatively small furrow. Rostrum long, extending much beyond apex of metacoxae. Antennal pilosity double, erect, long and dense on first segment, much shorter and appressed on second segment.

Pronotum. Pilosity of pronotal collar erect to semierect, long and relatively rigid. Pronotum and scutellum with two “types” of punctuation: one deep, large, slightly confluent, each point enclosing one seta (of very variable sizes depending on the species); the other very small, occupying intermediate areas. Lateral margins of pronotal disc calluslike, forming a pair of nearly flat anterolateral carinae, similar to those in *Chinamiris* (“carinal knobs” *sensu* EYLES & CARVALHO, 1991). Posterior margin of disc medially slightly convex to nearly straight; calli sometimes reaching lateral margins of pronotum and also generally joining mesad, without circular furrow. Pilosity of pronotal disc and scutellum semierect, relatively long and stiff.

Hemelytra. Clavus characteristic (fig. 34), bearing two almost parallel rows of relatively large, deep punctures, one arranged along the claval vein. Corium bearing a row of similar punctures, more or less distinct near the exocorium. Hemelytral pilosities always appressed, slightly silky and silvery. Hemelytral coloration nearly uniformly brownish.

Legs. Metafemoral pilosity⁽⁵⁾ erect, relatively stiff, length of hairs greater than *Lanap*. Tibial pilosity erect, length of setae greater than *Lanap* and than width of tibiae. Metatibial spines absent (YASUNAGA, 1991).

Genital structures. Left paramere large, with long, erect pilosity on latero-external margin. Principal lobe of *PMS* bearing ctenoidal process, with large, well-separated teeth along apical part of the lobe (figs. 8-11, 21-22, 28-29). The endophallus of *T. gressitti* is unknown (CARVALHO, 1988). Upper wall of the vagina large; the lateral oviducts originating postero-medially.

Distribution. — India, Indonesia, Malaysia, Japan.

Discussion. — **The genus *Tolongia* sensu novo.** All character states mentioned in our diagnosis of the genus *Tolongia* are exhibited by the type species of the nominal monobasic genera *Exopantilius*, *Gressittimiris* and *Tolongia*. The differences between these three (type) species representing respective nominal genera are not significant: (1) the frons is striate in *T. pilosa* and *T. marginicollis*, but not in *T. gressitti*; (2) the frontal pilosity is shorter or equal to *Lanap* in *T. pilosa*, clearly shorter in the two other species; (3) the eyes are practically glabrous in *T. pilosa* and *T. gressitti*, but clearly pilose in *T. marginicollis*; (4) the semierect setiform pilosity on the callosities is higher or equal to *Lanap*, and relatively rigid in *T. pilosa* and *T. gressitti*, but short and not stiff in *T. marginicollis*; (5) the calli are joined and the posterior furrow absent in *T. pilosa* and *T. marginicollis*, but the calli are not joined and have a posterior furrow in *T. gressitti*; (6) the scutellum is clearly striate only in *T. marginicollis*; (7) the mesoscutum is covered in *T. pilosa*, the condition is intermediate, exhibiting intraspecific variation, in *T. gressitti* and in *T. marginicollis*, in which the mesoscutum is slightly exposed; (8) the metatibial pilosity is setiform in *T. pilosa* and *T. marginicollis*, but setiform to spiniform in *T. gressitti*; (9) the corial pilosity of *T. pilosa* and *T. marginicollis* is longer than or equal to *Lanap*, while it is shorter in *T. gressitti*; (10) the cuneal pilosity is longer than *Lanap* in *T. pilosa*, shorter and slightly stiffer in *T. gressitti* and *T. marginicollis*; (11) the apophysis of the right paramere is hooklike in *T. pilosa* and *T. gressitti*, but rather hammerlike in *T. marginicollis*. These differences could represent intraspecific variability. Unfortunately, not enough material is available to assess and interpret variability. Moreover, the obvious common characters (also found in *T. kerzhneri*) should not be neglected, such as the rostral length; the pronotal structures (punctuation, calli, callose margins of the disc and “carinal knob”); claval structures (bearing two rows of large and deep punctures); corial structure (bearing a row of large and deep punctures); metatibial structure (lacking spines); endophallic structure (including ctenoidal process) and vaginal structures (reduced parieto-vaginal rings, relatively reduced A structures, large E structures – *T. kerzhneri* excepted – and H structures – *T. pilosa* excepted).

(5) Not visible in the type specimen of *Tolongia marginicollis*.

Consequently, we consider *Gressittmiris* Carvalho, 1988 and *Exopantilius* Yasunaga, 1991 as junior synonyms of *Tolongia* Poppius, 1915.

Relationships of *Tolongia* in the tribe Mirini. – Because of the antennal sockets, *Tolongia* may be confused with *Adelphocoris* Reuter, 1896 and other related genera (e.g., *Adelphocoridea* Poppius, 1912, *Adelphocorisella* Miyamoto & Yasunaga, 1993, *Columnus* Stål, 1866, *Waucoris* Carvalho, 1987, etc.), and with *Eurystylus* Stål, 1871 (cf. STONEDAHL, 1995) and closely related genera (*Eurystylomorpha* Poppius, 1915, *Eurystylopsis* Poppius, 1911, *Pseudeurystylus* Poppius, 1915). However, *Tolongia* is easily separated from the first group (*Adelphocoris*) by the absence of the platelike process of lorae; its antennal structure; the pilosity and punctuation of the pronotum, scutellum and hemelytra; the absence of metafemoral and metatibial spines; and from the second group (*Eurystylus*) by the large size and the above-mentioned characters.

The general appearance of *Tolongia* resembles that of *Macropeplus* Poppius, 1912 and some closely related genera (*Aristopeplus* Poppius, 1912, *Peltidopeplus* Poppius, 1912, etc.) and *Pantilius* Curtis, 1833 and the allied genera (*Apantilius* Kiritshenko, 1951, *Cheilocapsidea* Poppius, 1915, *Cheilocapsus* Kirkaldy, 1902, *Heteropantilius* Zheng & Liu, 1987, *Pseudopantilius* Reuter, 1904), but *Tolongia* is distinguished from these genera by its punctuation and pilosity. The rows of large claval and corial punctures, and the abdominal punctuation and pilosity are similar to those of the taxa probably related to *Argenis* Distant, 1904 (*Moroca* Poppius, 1912, *Morocisca* Carvalho, 1986, *Nesosylphas* Kirkaldy, 1908, *Tinginotum* Kirkaldy, 1902, *Tinginotopsis* Poppius, 1915 etc.), to some "Hyalopeplini" (e.g. *Guisardinus* Carvalho, 1979), and to some Mecistoscelini. But *Tolongia* also differs from these genera in its relatively large size, greater number of rows of punctures on clavus, opaque hemelytra, structure of the first antennal segment, etc.

Anosibea Carvalho, 1953, from Madagascar, is the only other mirine genus possessing two rows of deep punctures on the clavus, as in *Tolongia*. However, the habitus and female genital structures of *Anosibea* are totally different.

The phallic structures and, particularly, the very marked ctenoidal process, appear unique to the genus *Tolongia*. Such a process is known only in some *Phytocoris* and *Pantilius* spp. However, the relationship with *Phytocoris* is doubtful. In fact, the main feature shared by the two genera – the ctenoidal process – is very rare in *Phytocoris* species and probably not homologous.

The comment of POPPIUS (1915 : 55) more than 8 decades ago, is still appropriate: "Diese eigentümliche Gattung steht unter Capsarien ziemlich isoliert da". Effectively, the relationships of *Tolongia* cannot be accurately defined today because of the lack of knowledge about the suprageneric classification and phylogeny of the Mirini.

Relationships in the genus *Tolongia*. – The shape of the parameres enables us to distinguish *T. kerzhneri* sp. n., *T. marginicollis* and *T. pilosa* from *T. gressitti*. On the basis of the genitalia and dorsal pilosity, we can assume that *T. marginicollis* and *T. pilosa* are more closely allied to each other, while *T. pilosa* is recognised by the absence of ACH in the phallus and by the absence of H structures on the vaginal posterior wall. The parieto-vaginal rings are relatively small in three species (*T. gressitti* female unknown), but the reinforcements of dorsal labiate plate are obvious only in *T. kerzhneri* and *T. marginicollis*. Unfortunately a cladistical study is not yet possible as *T. gressitti* and *T. marginicollis* are insufficiently known.

Key to the species of the genus *Tolongia*

1. Relatively dark species; pronotum uniformly dark brown; lateral margins of the pronotum clearly curved, so that they seem partially concave in dorsal view; apex of the left paramere rounded, truncate; apex of right paramere hammerlike; endophallic structures and female unknown. New Guinea *gressitti* (Carvalho, 1988)

- Relatively pale insect; pronotum not uniformly dark brown, either brownish or yellow-brownish to greenish posteriorly, in this last case often with a wide subapical black band (sometimes limited to stripe at humeral angles of pronotum); lateral margins of the pronotum slightly curved, appearing straight in dorsal view; apex of left paramere not truncate 2
2. Endophallic sclerite present (figs. 8, 22-23); posterior wall complex, including H structures (figs. 15, 25) 3
- Endophallic sclerite absent (fig. 28); posterior wall simple, lacking H structures (fig. 30); pronotum brown to reddish-brown, almost unicolorous, never tinged with green posteriorly nor marked with a wide black band; humeral angles with a small black stripe (fig. 35). India, Japan *pilosa* (Yasunaga, 1991)
3. Dorsal pilosity short, sparse; pronotum with a sub-posterior black stripe (figs. 33-34); metapleura each with a black spot; apophysis of left paramere proportionally short and wide (figs. 3-5), the curvation of anterior margin of this apophysis not obvious in dorsal view; ctenoidal process of PMS in one part and strongly curved (fig. 8); anterior, lateral, and posterior sclerifications of dorsal labiate plate small, hiding the parieto-vaginal rings (figs. 12-14); B structures large, complex; E and H structures present, relatively small (fig. 15). Indonesia, Malaysia *kerzhneri*, sp. n.
- Dorsal pilosity relatively long and dense; pronotum lacking a sub-posterior black stripe; metapleura often lacking black spots; apophysis of left paramere proportionally long and narrow (fig. 18, furrow), the curvation of anterior margin of this apophysis obvious in dorsal view; ctenoidal process of PMS sometimes in two separated parts, always slightly curved; a supplementary toothlike sclerite present (fig. 21); anterior, lateral, and posterior sclerite of dorsal labiate plate small, not hiding the parieto-vaginal rings (fig. 24); B structures small; E structures huge; H structures large (fig. 25). Indonesia *marginicollis* Poppius, 1915

Tolongia gressitti (Carvalho, 1988), comb. n.

Gressittmiris gressitti Carvalho, 1988 : 217 (as new species) [Type-locality: Val. Karubaka, New Guinea]; SCHUH, 1995 : 722 (catalog).

Material examined. – Holotype (σ) by original designation and monotypy: “New Guinea: NE. Swart. Val. Karubaka. 1400 m. 06.XI.1958” / “J. L. Gressitt collector” / “Holotype” (FC n° 1028) (BPBM).

Description. – A detailed description of the external morphology of *T. gressitti* is provided by CARVALHO (1988) and not repeated here.

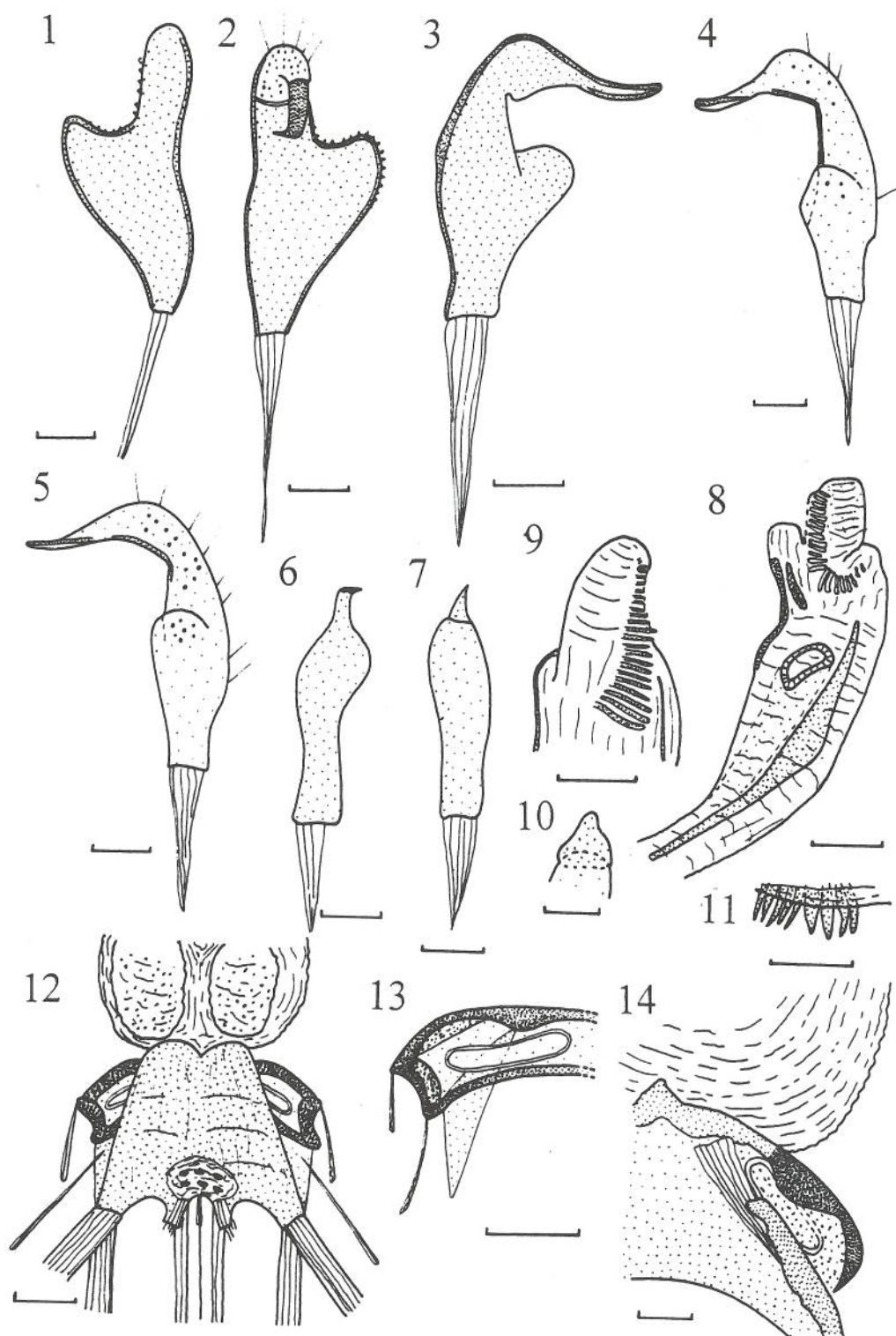
Table 1. – Measurements of the holotype (σ) of *T. gressitti*.

H.te.	H.y.	Lab	Lanap	L.A.	L.a.	L.a1.	L.a2.	L.a3.
1.06	0.71	0.39	0.08	4.78	?	1.24	3.00	0.63
L.a4.	L.c.	I.c.	L.m.	L.p.	I.p.	L.r.	L.s.	I.s.
?	1.22	0.86	3.51	1.59	2.57	?	1.27	1.18
L.s.c.	L.t.	I.t.	L.ta1.	L.ta2.	L.ta3.	L.te.1.	I.v.	I.y.
1.57	7.59	2.76	0.24	0.22	0.24	0.33	0.55	0.38

Genitalia. Male. Left paramere. Sensory lobe visible, with latero-external margin rounded to angular, without tuft of setae or spines but with small spinelike hairs (as on the lobe surface); posterior margin oblique to postero-latero-internal margin of the body. Body without spines but with very long, spinelike setae, particularly on latero-outer margin, and with much smaller spinelike setae. Base small. Arm slightly narrower than body. Angle of body-arm less than 90°, close to 45°. Apophysis not separated from arm; apex forming a wide, blunt point. Right paramere clearly narrowed medially, bearing long setae on latero-outer margin, with a hooklike apophysis. Phallic structure unknown (CARVALHO, 1988).

Female unknown.

Distribution. – This species is known only from the type-locality in New Guinea.



Figs. 1-11, *Tolongia kerzhneri*, sp. n., male. – 1-3, left paramere, latero-dorsal, latero-ventral and ventral views respectively. – 4-5, left paramere in dorsal view of the specimens FC n° 330 and FC n° 331. – 6-7, right paramere, dorsal and latero-dorsal views. – 8, endophallus, latero-dorsal view. – 9, apical part of the endophallus. – 10-11, ctenoidal process and detail of a tooth of this process.

Tolongia kerzhneri, sp. n.

Type material. — **Holotype** (♀) : “Indonesia: Sulawesi Utara, Dumoga-Bone N.P. April/May 1985“ / “J. H. Martin Coll. 660-1440m, R. Ent. Soc. Lond. Project Wallace B.M. 1985-10” / “At light” (FC n° 1298) (BMNH). Type-locality: North Sulawesi (= Utara), Dumoga-Bone Natural Park. — **Paratypes:** 7 ♂♂, 3 ♀♀: as holotype (FC n° 1297, 1300-1309) (BMNH); 1 ♂: “Indonesia: Sulawesi Utara, G. (= Gunung, Dr J. Martin in litt.) Mogonipa Summit, 1008 m. 21.V.1985” / “J. H. Martin Coll., R. Ent. Soc. Lond. Project Wallace B.M. 1985-10” (FC n° 1310) (BMNH); 1 ♂: “Malaysia (Borneo): Sabah: Kinabalu National Park, Headquarters area, el. 1560 m., 08.IX.1983. G. F. Hevel & W. E. Steiner” (FC n° 1230) (USNM); 6 ♀♀, 3 ♂♂: “Singapore, coll. Baker” (FC n° 1231-1238) (USNM); 1 ♂: “EX F.M.S. Museum B.M. 1955-354” / “Ex coll. F.M.S. Museums. Malay Peninsula; Selangor; Bukit Kutu. At light, 11.III.1931. H. M. Pendlebury” (FC n° 1289) (BMNH); 1 ♂, 2 ♀♀: as above, but “3300 feet” and “25-26.XI.1932” (FC n° 1290-1291) (BMNH); 1 ♀: “Ex coll. F.M.S. Museums. (Malay Peninsula). Pahang, F.M.S., Cameron Highlands, 4500-5000 feet, 17.VI.1935, H. M. Pendlebury” (FC n° 1292) (BMNH); 3 ♂♂: as above but “4500-4800 feet” and “23.VI.1935” (FC n° 1293-1295) (BMNH); 1 ♂: “EX F.M.S. Museum B.M. 1955-354” / “Ex coll. F.M.S. Museums. (Malay Peninsula) Pahang, F.M.S., Fraser’s Hill, 4000 feet, 20.VII.1936, H. M. Pendlebury” (FC n° 1296) (BMNH).

Description. — Body very elongate [maximal *L. t.* observed in females (of the FC n° 1298) = 11.40 mm, maximal *L. t.* in males (of the FC n° 1305) = 10.68 mm], strongly punctate, relatively shiny except on pronotum and hemelytra, covered with light, semierect pilosity.

Head quite steep, yellow or brownish orange, flattened in front. Vertex margined. *l.v. > l.y.* (except for FC n° 1230). Eyes dark brown, large, prominent, connected with posterior pronotal margin. Clypeus yellow, quite prominent, rounded at base, weakly separated from front. Lorae and juga small. Rostrum long, reaching 1/3 or 1/2 of abdomen. Antennae long; first segment quite thick, about as long as lateral margins of pronotum, with a short, semierect pilosity. Second segment on average in males 2.41, in females 2.42 times as long as and slightly thinner than first; pilosity shorter than that on first segment, particularly beyond middle. Third segment much shorter than second and often also shorter than first, thinner. First segment and at least base of second red-brown; half of the second black, apex yellow; third and fourth segments brown, dark brown or black, except bases yellow.

Pronotum on average in males 1.61, in females 1.59 times as wide as long, yellow or orange-brownish tinged with greenish posteriorly; strongly narrowed anteriorly but not constricted, with a prominent lateral expansion that is sometimes provided with dark brown or black spots. Disc with large and deep orange or red punctures. Calli relatively small, raised, posteriorly fused.

Scutellum flat, punctate and striate, greenish grey or yellow-brownish to orange, with yellow apex. Mesoscutum uncovered.

Hemelytra extending beyond the posterior apex of abdomen in male. Clavi, coria and the cuneus brown-red (sometimes with beige spots). Each clavus with two rows of large punctures. Cuneus longer than wide. Membrane brown-greyish, veins sometimes red. Hemelytral pilosity double, one setiform, brown, semierect, rather long, the other silky, silvery, not erect, in tufts and short.

Coxae, thoracic and abdominal pleura yellow, with an oblong black spot dorsal to ostiolar peritreme.

Morphometry. The measurements indicate a significant sexual dimorphism in some features (t test for two groups and independent variables) such as *L.t.*, *l.t.*, *L.p.*, *l.p.*, *Lab*, *l.v.*, *l.y.*, *L.s.*, *l.s.*, *H.te.* and *L.a.* All these measurements are greater in females than in males, except for *l.y.*

Genitalia. Male. *Left paramere.* Sensory lobe large (figs. 1-5), much wider than body. Latero-internal margin of lobe rounded, without spines or tufts of setae. Posterior margin of lobe and latero-internal margin of body clearly separated, nearly perpendicular. Body surface without spines, but pilose, particularly on latero-external margin close to the arms. Postero-latero-internal margin of body with denticles. Sockets of setae clearly visible. Angles body-arm and body-apophysis close to 90°. Apex of apophysis terminating in blunt point. Apophysis elongated and curved, without accessory lobe. Arm very

Figs. 12-14, *Tolongia kerzhneri*, sp. n., female. — 12, medio-posterior part of the vagina, dorsal view. — 13, left parieto-vaginal ring, latero-dorsal view. — 14, right parieto-vaginal ring, dorsal view, with dorsal wall removed. (Scale bar represents 0.1 mm, except as otherwise mentioned)

wide at base, gradually narrowed toward apex, not separated from apophysis. *Right paramere* as usual in mirines (figs. 6-7), not clearly narrowed medially, with hooklike apophysis. *Phallus* without spicules, comb or lobal sclerite (figs. 8-11). *ACH* elongated, curved, undivided, simple, not surrounding the secondary gonopore. Part corresponding to the sclerotized process spiculiform. *PMS* apparently three lobed. Ctenoidal process large (fig. 11), formed by clearly separated teeth. Ductus seminis wide, apparently not sandglass like apically. Secondary gonopore large.

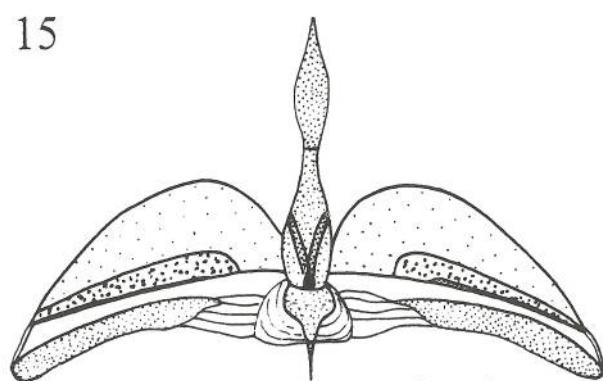
Table 2. – Measurements of *T. kerzhneri*, sp. n. [n: number of observations, μ : mean, CI: confidence interval ($\alpha = 0.95$)].

Sex		H.te.	H.y.	Lab	Lanap	L.A.	L.a.	L.a1.
σ	N	18	18	18	18	18	16	18
	μ	1.13	0.85	0.50	0.13	5.20	4.25	1.68
	μ -CI	1.08	0.83	0.48	0.13	4.91	3.91	1.55
	μ +CI	1.17	0.86	0.51	0.14	5.48	4.59	1.82
φ	N	13	13	13	13	13	11	13
	μ	1.23	0.84	0.55	0.13	5.60	5.40	1.72
	μ -CI	1.17	0.80	0.52	0.12	5.17	4.94	1.61
	μ +CI	1.29	0.88	0.57	0.14	6.02	5.85	1.84
σ		L.a2.	L.a3.	L.a4.	L.c.	L.c.	L.m.	L.p.
	N	18	16	11	18	18	7	18
	μ	4.03	1.73	1.40	1.51	0.84	4.51	1.74
	μ -CI	3.83	1.55	1.23	1.45	0.79	3.55	1.70
φ	μ +CI	4.22	1.91	1.57	1.57	0.89	5.47	1.77
	N	12	11	7	13	13	3	13
	μ	4.22	1.91	1.23	1.60	0.86	4.47	1.97
	μ -CI	3.94	1.80	0.88	1.48	0.76	?	1.90
σ	μ +CI	4.50	2.01	1.59	1.71	0.96	?	2.03
		L.p.	L.r.	L.s.	L.s.	L.s. c.	L.t.	L.t.
	N	18	15	18	18	18	18	18
	μ	2.80	4.78	1.55	1.36	1.98	9.23	3.21
φ	μ -CI	2.71	4.68	1.50	1.28	1.86	8.78	3.09
	μ +CI	2.90	4.88	1.60	1.45	2.11	9.68	3.33
	N	13	11	13	13	13	13	13
	μ	3.13	5.01	1.70	1.60	1.88	10.15	3.54
σ	μ -CI	2.95	4.64	1.58	1.49	1.66	9.47	3.35
	μ +CI	3.31	5.38	1.82	1.71	2.10	10.84	3.72
		L.ta1.	L.ta2.	L.ta3.	L.te.1.	L.v.	L.y.	
	N	6	6	6	18	18	18	
σ	μ	0.34	0.36	0.39	0.62	0.54	0.49	
	μ -CI	0.26	0.25	0.33	0.56	0.53	0.47	
	μ +CI	0.42	0.48	0.46	0.67	0.55	0.50	
φ	N	2	2	2	13	13	13	
	μ	0.28	0.42	0.48	0.68	0.65	0.46	
	μ -CI	?	?	?	0.60	0.63	0.44	
	μ +CI	?	?	?	0.76	0.68	0.47	

Female. *Parieto-vaginal rings* small, surrounded by very wide reinforcements of dorsal labiate plate (figs. 12-14). Anterior margin of reinforcements in a circular arc. Latero-external margin concave, without projections. Posterior margin nearly straight. Rings ovoid, separated by a distance equal to their maximum length, without dorsal or medial prolongation. Ventral plate absent. *Posterior wall* large (fig.

Fig. 15, *Tolongia kerzhneri*, sp. n., female, posterior wall, dorsal view.
 Figs. 16-23, *Tolongia marginicollis* Poppius, 1915, male. – 16-17, right paramere, dorsal and latero-dorsal views. – 18, left paramere, dorsal view. – 19-20, apex of left paramere, frontal and dorsal views respectively. – 22, endophallus in dorsal view. – 21, detail of the same. – 23, endophallic sclerite.
 Figs. 24-26, *Tolongia marginicollis* Poppius, 1915, female. – 24, right parieto-vaginal ring in dorsal view. – 25, posterior wall, in dorsal view. – 26, the same, detail of the B structure.

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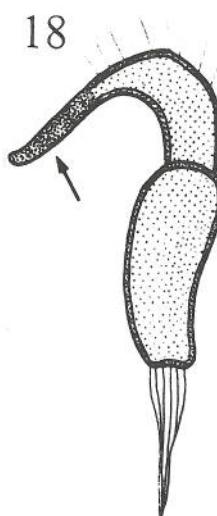
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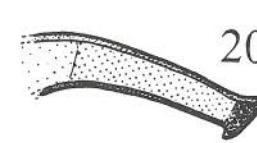
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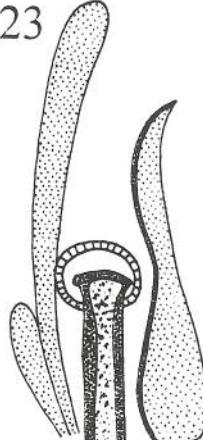
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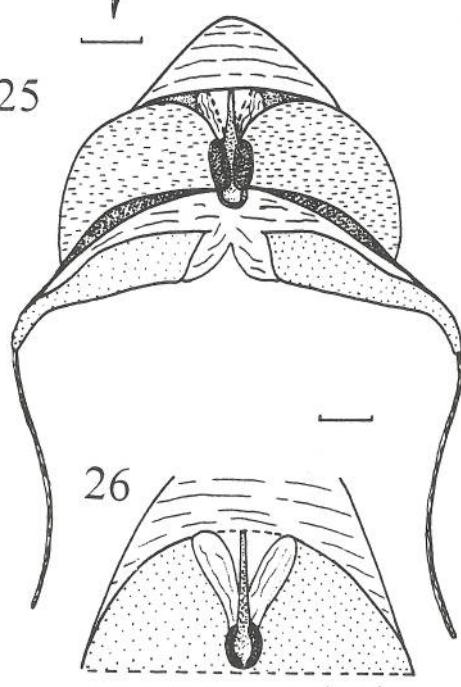
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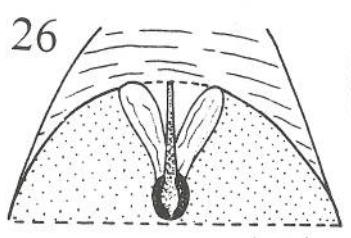
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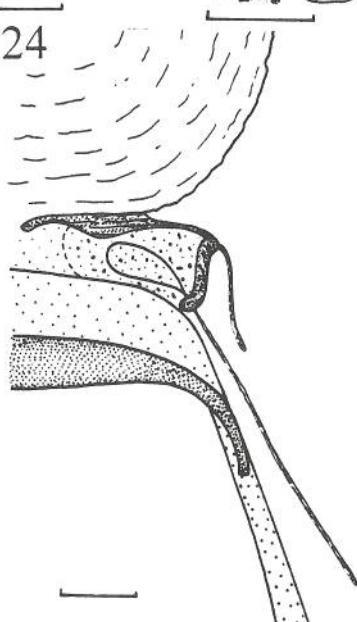
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24



15). B structure formed by two parts: an undivided dorsal structure and an elongate droplike foot. Socle (= posterior plate of dorsal structure) apparently absent. Concavity well marked. E structures large. A structures as usual in mirines. Lateral plates present, covered by the E structures. H structures present, large.

Distribution. – Indonesia, Malaysia [fig. 36 (triangles)].

Etymology. – Named in honour of Dr I. M. Kerzhner.

Tolongia marginicollis, Poppius, 1915

Tolongia marginicollis Poppius, 1915 : 55 (as new species) [Type-locality: Tolong, Sumatra]; CARVALHO, 1952 : 93 (as type-species); CARVALHO, 1959 : 268 (catalog); SCHUH, 1995 : 965 (catalog).

Material examined. – **Holotype** (σ) by monotypy: “Sumatra. D. Tolong. XI. 1890. *Modigliani*” / “Museo Civico Genova” / “Mus. Zool H.: fors. Spec. Typ. n° 10134 *Tolongia marginicollis* n. gen. et sp.” (FC n° 948) (MZHF). – **Other material:** 1 ♀: “Indonesia: Sulawesi Utara, Dumoga-Bone N.P. April/May 1985” / “At light” / “J. H. Martin Coll. 660-1440m, R. Ent. Soc. Lond. Project Wallace B.M. 1985-10” (FC n° 1299) (BMNH); 1 ♂ “Indonesia ; Sumatra : Dairi, 1600m., NW end of Lake Toba. E. W. Diehl” (FC n° 1321) (AMNH).

Redescription. – Body elongate ($L.t.$ in the type = 8.85 mm), strongly punctate dorsally, relatively shiny except for pronotum and hemelytra, covered with light, semierect pilosity.

Head quite steep, yellow, wider than long in dorsal aspect; in frontal view about as long as wide, in lateral view slightly longer than its basal height (POPPIUS, 1915). Frons flat. Vertex clearly marginated. $L.v. < l.y.$ in the males. Eyes silvery or dark brown (dried material), large, prominent, touching posterior margin of pronotum, very elongate in female. Clypeus prominent, rounded at its base, slightly separated from frons. Lora and juga small. Rostrum long, reaching 1/3 or 1/2 of abdomen. Antennae long; first segment quite thick, long, subequal in length to lateral margins of pronotum, with a stiff, semierect pilosity. Second segment much longer and slightly thinner than first; pilosity shorter than on first segment (holotype), particularly on apical half. Third segment much shorter than the second and about half as long as first, thinner. First antennal segment and at least base of second red-brown; basal half of second reddish-brown (holotype), yellow apex; third and fourth segments dark.

Table 3. – Measurements of *T. marginicollis* [*: holotype].

FC n°	H.te.	H.y.	Lab	Lanap	L.A.	L.a.	L.al.
948*(σ)	1.22	0.82	0.45	0.12	5.11	4.34	1.43
1321 (σ)	0.88	0.82	0.89	0.17	5.53	/	1.39
1299 (♀)	1.35	0.92	0.55	0.12	6.47	5.87	2.02
FC n°	L.a2.	L.a3.	L.a4.	L.c.	L.c.	L.m.	L.p.
948*(σ)	3.67	0.86	/	1.35	0.82	/	1.41
1321 (σ)	3.71	2.72	1.10	1.51	0.82	2.20	1.57
1299 (♀)	4.85	2.13	1.57	1.86	0.94	/	2.12
FC n°	L.p.	L.r.	L.s.	L.s.	L.s. c.	L.t.	L.t.
948*(σ)	2.57	3.74	1.47	1.39	1.92	8.85	2.78
1321 (σ)	2.55	4.47	1.41	1.31	1.71	9.10	2.98
1299 (♀)	3.59	5.55	1.87	1.80	2.41	11.40	3.96
FC n°	L.ta1.	L.ta2.	L.ta3.	L.te1.	L.v.	l.y.	
948*(σ)	/	/	/	0.33	0.41	0.48	
1321 (σ)	0.24	0.41	0.41	0.49	0.41	0.48	
1299 (♀)	/	/	/	0.45	0.71	0.49	

Pronotum wider than long (l.p. in the type = 1.82 times L.p.), yellow or orange-brown to greenish posteriorly; strongly narrowed anteriorly but not constricted, with a proeminent lateral expansion that is provided with dark brown or black spots. Posterior margin of pronotum distinctly rounded, with a black stripe on humeral angles (holotype) but lacking a large subapical band. Disc with large, deep and dark punctures. Calli relatively small, marked, posteriorly fused.

Scutellum punctate and striate, flat, brownish. Mesoscutum clearly uncovered (holotype, maybe due to an artifact).

Hemelytra much longer than abdomen in male. Clavi, coria and cunei brown-red (cunei sometimes with red spots). Each clavus with two rows of large punctures. Cuneus longer than wide. Membrane brown-greyish, the veins sometimes red. Setiform pilosity black or brown, semierect. Silky pilosity present, but not obvious in female.

Coxae, thoracic and abdominal pleura yellow, often lacking an oblong black spot dorsal to the ostiolar peritreme.

Genitalia. Male. *Left paramere*. Sensory lobe large (fig. 18), much wider than body. Latero-internal margin of lobe rounded, finely serrated, without spines or tufts of setae. Posterior margin of lobe and latero-internal margin of body clearly separated, nearly perpendicular. Body surface without spines, but pilose, particularly on latero-external margin of body, close to arm. Postero-latero-internal margin of body with denticles. Sockets of setae clearly visible. Angles body-arm and body-apophysis nearly making 90°. Apex of apophysis terminating in blunt point. Apophysis elongated and curved, more than in *T. kerzhneri*, without accessory lobe (figs. 18-20). Arm very wide basally, gradually narrowed toward apex, not separated from apophysis. *Right paramere* as usual in mirine form (figs. 16-17), not clearly constricted medially, its apophysis hooklike, very similar to that of *T. kerzhneri*. *Endophallus* without spicules, comb or lobal sclerite (figs. 21-23). *ACH* not obvious, relatively reduced (fig. 23). *PMS* apparently three lobed. Ctenoidal process large (figs. 21-22), not curved anteriorly, formed by two fields of clearly separated teeth. Ductus seminis wide, apparently not sandglass like apically. Secondary gonopore large.

Female. *Parieto-vaginal rings* small, surrounded by very wide reinforcements of dorsal labiate plate (fig. 24). Anterior margin of reinforcements nearly straight. Latero-external margin sigmoid, without projections. Posterior margin nearly straight. Rings droplike, separated by a distance greater than their greatest length (contrary to the reinforcements). Ventral plate absent. *Posterior wall* large (fig. 25) and very "typical". *B* structure reduced. Socle (= posterior plate of dorsal structure) apparently absent or fused with the foot. Concavity well marked. *E* structures very large. *A* structures small. Lateral plates present, uncovered by the *E* structures. *H* structures present, large.

Distribution. – Indonesia [fig. 36 (squares)].

Tolongia pilosa (Yasunaga, 1991), comb. n.

Exopantilius pilosus Yasunaga, 1991 : 122-124 (as new species) [Type-locality: Mt. Chausuyama, Nagano Prefecture, Japan]; YASUNAGA et al., 1993 : 162, pl. 23 (redescription in Japanese, fig.); SCHUH, 1995 : 769 (catalog); KERZHNER & JOSIFOV, 1999 : 100 (catalog).

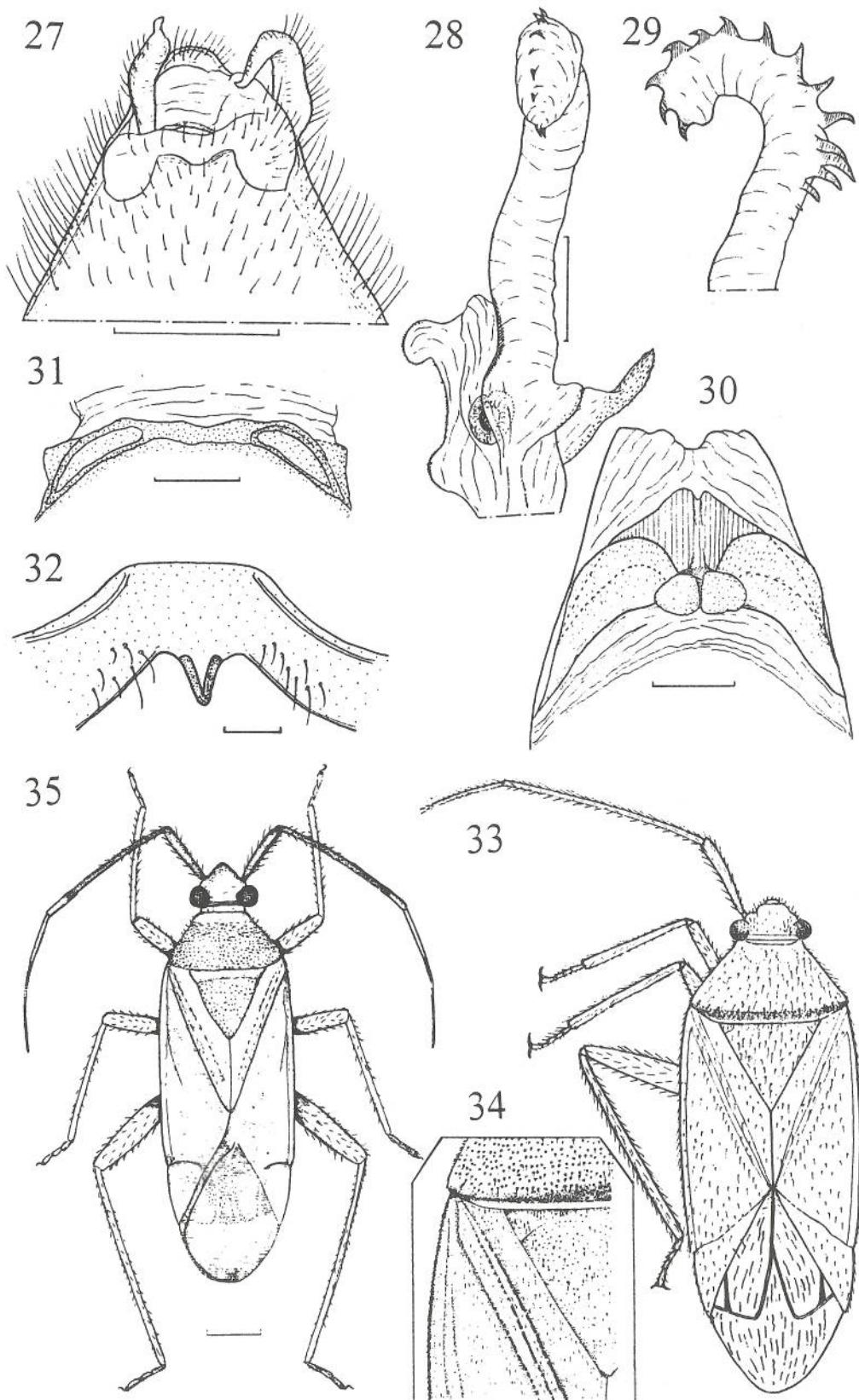
Material examined. – **Holotype** (♂) by original designation: "Mt. Chausuyama, Urugi, Shimoina, Nagano pref., Honshu, Japan, 15.viii.1980, N. Kobayashi leg." (NSMT). **Paratypes:** 1 ♀: "Takeda, Ishigaki Is., Okinawa pref., 14.III.1977, Y. Hori leg." ; 1 ♀: "Yarabu, Ishigaki Is., Okinawa Pref., 29.III.1962, Y. Arita leg." ; 1 ♂: "Monbanare, Otomi, Iriomote Is., 26.III.1991., M. Hayashi leg." ; 1 ♂: "Funaura, Iriomote Is., Okinawa pref., 11.XI.1984., M. Tomokuni leg." (NSMT). – **Other material:** 2 ♂♂ and 1 ♀, "Iriomote Is. Monbanare, near Otomi, 13.V.1993. T. Yasunaga leg." / "Exopantilius pilosus" YASUNAGA. Det. YASUNAGA 1995" (FC n°s 233-234) (HUES); 1 ♀: "Mt Tatera, Tsushima Is., 24-25.VIII.1979, I. Kanazawa leg." (MNHA); 1 ♀: "Aira River, Iriomote Is., Ryukyus, 24.V.1999, K. Takahashi leg." (HUES); 1 ♀: "Mt. Yamaingiri, Izumi vill., Kyushu, 29.VI.1992, T. Yasunaga leg." (HUES); 1?: Darjeeling, N. E. India (88.5° E., 27°N.) (NSMT).

Redescription. – A detailed description of the external morphology is given by YASUNAGA (*loc. cit.*) and not repeated here. For dorsal habitus, see fig. 35.

Figs. 27-29, *Tolongia pilosa* (Yasunaga, 1991) comb. n., male. – 27, pygophore, dorsal view. – 28-29, endophallus. – 28, dorsal view. – 29, lateral view of apex.

Figs. 30-32, *Tolongia pilosa* (Yasunaga, 1991) comb. n., female. – 30, Posterior wall, dorsal view. – 31, Parieto-vaginal rings, dorsal view. – 32, subgenital plate, dorsal view.

Figs. 33-35, *Tolongia* spp. habitus. – 33, *T. kerzhneri*, sp. n. – 34, clavus of *T. kerzhneri*, sp. n. – 35, *T. pilosa* (Yasunaga, 1991).



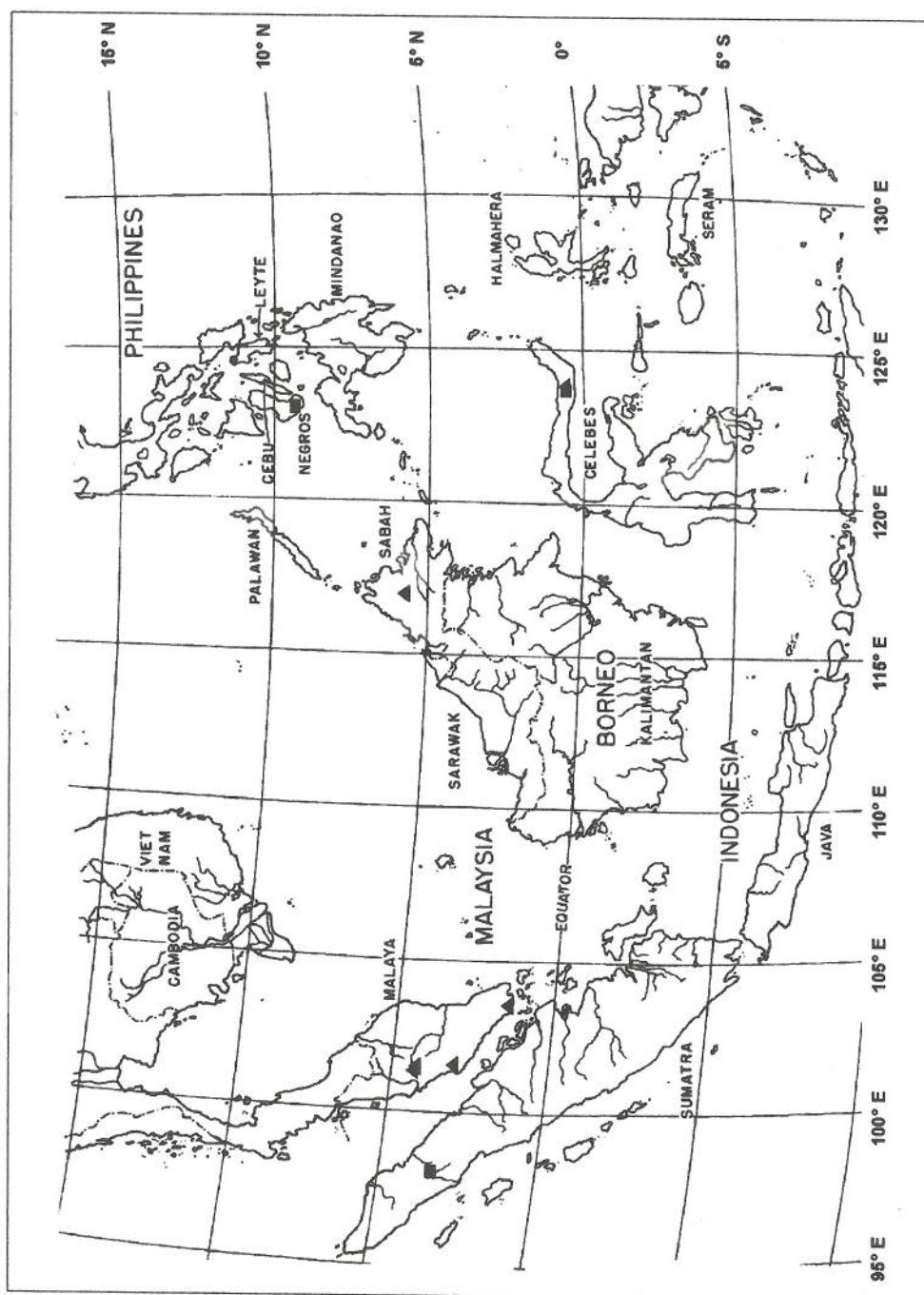


Fig. 36, distribution of *Tolongia kerzhneri*, sp. n. (triangles) and of *T. marginicollis* Poppius, 1915 (squares).

Genitalia. Male. Pygophore simple (fig. 27), without lateral tooth. Left paramere clearly pilose with long setae, longer than the body width, mainly situated on outer margin of the body, and not arranged in tufts. Sensory lobe large, at least equal to body width. Extreme apex of lobe rounded, without spines. Angle of body to apophysis less than 90°. Apex of apophysis forming two pointed ends facing each other. Apophysis slightly narrower than body width. Right paramere not narrowed medially; its apophysis hooklike (fig. 27). Endophallus simple (figs. 28-29), without spiculum, comb, or lobal sclerite. PMS apparently three lobed. Ductus seminis relatively large, not sandglasslike apically. ACH structure absent. Secondary gonopore small.

Table 4. – Measurements of *T. pilosa*.

FC n°	H.te.	H.y.	Lab	Lanap	L.A.	L.a.	La1.
233 (♂)	1.00	0.76	0.43	0.12	4.69	3.47	1.24
234 (♀)	1.10	0.76	0.49	0.16	5.22	4.43	1.35
FC n°	La2.	La3.	La4.	L.c.	L.c.	L.m.	L.p.
233 (♂)	3.29	1.29	1.00	1.22	0.86	4.02	1.55
234 (♀)	3.22	1.49	1.29	1.31	1.06	4.00	1.67
FC n°	I.p.	L.r.	L.s.	I.s.	L.s .c.	L.t.	I.t.
233 (♂)	2.29	?	1.29	1.14	1.67	8.17	2.78
234 (♀)	2.71	?	1.43	1.43	1.63	6.47	3.14
FC n°	L.ta1.	L.ta2.	L.ta3.	L.te.1.	I.v.	I.y.	
233 (♂)	0.33	0.49	0.36	0.41	0.37	0.51	
234 (♀)	0.39	0.39	0.33	0.33	0.55	0.43	

Female. Parieto-vaginal rings small, surrounded by very large reinforcements of dorsal labiate plate (fig. 31), latero-internal margin convex, latero-external margin forming a slightly curved point posteriorly, posterior margin nearly straight and anterior margin convex. Ventral labial plate not clearly visible. Rings without dorsal projection. Posterior wall apparently very similar to that of *T. marginicollis* (fig. 30), but lacking H structures. B structure complex. Socle (= posterior plate of dorsal structure) and concavity absent. E and A structures large; lateral plates present. Subgenital plate clearly sharp (fig. 32).

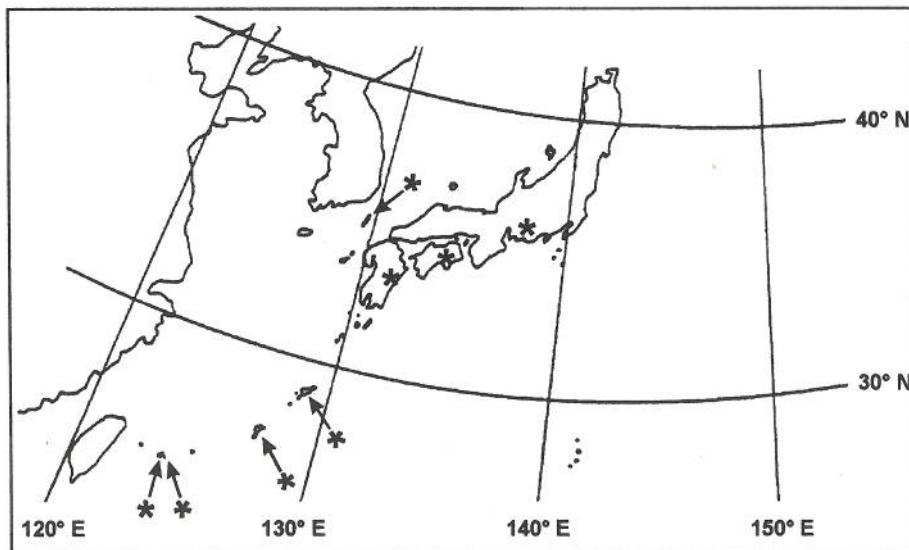


Fig. 37, distribution of *Tolongia pilosa* (Yasunaga, 1991) [data from India are omitted].

Biological data. – Adults of this mirine have been collected by sweeping broad-leaved trees and by light trap. Confirmed breeding host is Tea, *Camellia chinensis*, on which many nymphs were found.

Distribution. – Japan (fig. 37, *), India (Darjeeling).

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