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**INDO-MALAYAN AND PAPUAN FIG WASPS**  
**(HYMENOPTERA, CHALCIDOIDEA)**  
**2. THE GENUS PLEISTODONTES SAUNDERS (AGAONIDAE)**

by

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Until now, the genus *Pleistodontes* Saunders is known from the Australian continent and from Lord Howe Island. Two species were introduced into the Hawaiian Islands.

Samples of fig wasps from New Guinea and from the Solomon Islands were sent to me by Mr. E. J. H. Corner. They proved to consist of new species of *Pleistodontes*, which are described below. In addition, some new records of Australian species, mostly taken from the collection of the Hawaiian Sugar Planters' Association ("H.S.P.A."), Honolulu, are given, and the type species of the genus is redescribed. The records and "descriptions" by Girault are not considered in the present paper, as the typical material is being studied by Mr. E. F. Riek.

A discussion on the host records follows the descriptions of the species.

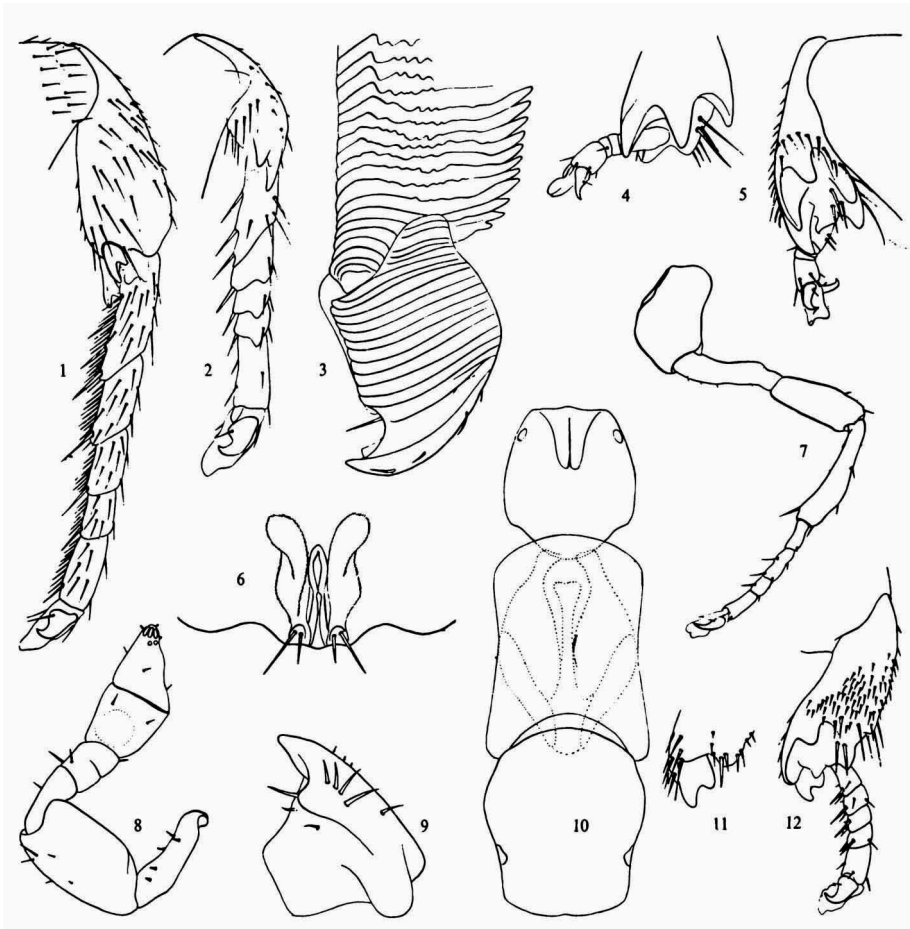
***Pleistodontes blandus* spec. nov.**

**Material.** — Eight immature ♀, 14 ♂, ex *Ficus glandifera* Summerh. (det. E. J. H. Corner), Solomon Is., leg. Kajewski, no. 3494; coll. Museum Leiden, no. 438; holotype, ♂, slide no. 438b, allotype, ♀, slide 438a, paratypes, ♀ ♂, slides 438c, d.

**Description.** — Male. Head (fig. 10) distinctly longer than its maximum width, and nearly twice as long as wide anteriorly; with the usual pubescence next to the antennal groove and behind the hypostomal margin. Eyes large. Mandible, fig. 9. Labium and maxillae (fig. 6): the labium bare, the maxillae with two long hairs on the ventral lobes. Antenna, fig. 8. The scape twice as long as wide, with some hairs on the antaxial surface; the pedicel thrice as long as wide, about half as long as the scape, with one antaxial hair at mid length; the third and fourth segments subequal, incompletely separated, the third segment with two antaxial hairs, the fourth with one

axial; the next two segments large, forming a distinct club; the penultimate with two dorsal and two ventral hairs; the apical segment, which is slightly longer than the penultimate, with some hairs at mid length, and some circular and oblong sensilla, and short excrescences in the apical part.

Thorax, fig. 10. The pronotum about one and a half times as long as wide, nearly glabrous, with rounded anterior margin; the mesonotum, metanotum,



Figs. 1-2. *Pleistodontes blandus* spec. nov. 1, tibia and metatarsus of female hind leg, antiaxial aspect; 2, do. of fore leg; 3, female mandible, ventral aspect (appendage partly omitted); 4, tip of tibia, and tarsus of male fore leg, dorsal aspect (pubescence partly omitted); 5, do., antiaxial aspect; 6, male labium and maxillae; 7, male mid leg, antiaxial aspect; 8, male antenna, dorsal aspect; 9, male mandible, ventral aspect; 10, male head and thorax (pubescence omitted); 11, tip of male hind tibia, axial aspect; 12, do., tibia and tarsus, antiaxial aspect. Figs. 10,  $\times 50$ ; 1, 2, 4, 5, 7, 11, 12,  $\times 120$ ; 3, 6, 8, 9,  $\times 190$ .

and propodeum fused into one dorsal piece, which is but little shorter than the pronotum, and maximally about as wide; the spiracular peritremata situated at two-thirds of the length. Leg I (figs. 4, 5) robust; the femur more than twice as long as the tibia, with sparse pubescence on the disk; the tibia hirsute along the dorsal margin, the apical armature consisting of three dorsal teeth, and two ventrals which are less prominent than the dorsals and which are accompanied by some stout hairs; the tarsus five-segmented, with spine-like hairs on the plantar edge of the first segment, a dorsal and a lateral hair on the third and fourth segments, respectively, and some apical hairs on the fifth; the segments approximately in ratio 18 : 6 : 5 : 4 : 16. Leg II (fig. 7) slender; the coxa rather large; the trochanter nearly as long as the tibia, and distinctly longer than the femur; the tarsal segments approximately in ratio 16 : 9 : 11 : 10 : 17, the second and third segments fused. Leg III (figs. 11, 12) robust; the coxa nearly as large as the femur; the femur not much longer than the tibia, but much wider; the tibia heavily pubescent on the dorsal surface, and at the ventral apex; the apical armature consisting of two large, dorsal antaxial teeth, one bidentate axial, movable tooth, and several stout spines at the ventral apex, both axially and antaxially; the tarsal segments with hairs, and with ventral spines on the first four segments, the segments approximately in ratio 9 : 5 : 4 : 5 : 8.

Gaster. The first tergite long and rather heavily sclerotized. The penis scarcely dilated at apex; the cerci of the tenth urite hyaline, without claws; the parameres large.

Length, 1.1-1.3 mm. Colour uniformly brown.

Female. The description is made from immature specimens. Consequently, not all body parts can be described and figured in the usual detail, and the total length and the colour cannot be given.

Head one and a half times as long as wide across the compound eyes, distinctly narrowing towards the stomal edge; with very small spines, especially next to and above the antennal groove. Longitudinal diameter of the eye four times as long as the temple, and slightly more than half as long as the cheek. Ocellar triangle sclerotized. Mandible (fig. 3) with about fifteen ventral ridges, and some smaller ridges in the distal corner; the appendage very wide, with thirty-five ventral ridges, which are produced into series of backward pointed teeth. Labium and maxillae not clearly visible in the specimens studied; the labium seems to bear two long hairs. Antenna short, very similar to that of *P. froggatti* Mayr, especially in the situation of the oblong sensilla, but the appendage of the third segment longer, reaching beyond the base of the fifth; the fourth segment half as

long as the fifth; the fifth to seventh segments subequal; the eighth shorter and about as long as the ninth to eleventh segments, which form a distinct club. The fifth to eleventh segments each bear a row of very long, narrow sensilla, the eleventh segment moreover bears some circular sensilla in the basal part.

Thorax. The pronotum wide, but not very long; with straight anterior margin; the scutum rounded pentagonal; the scutellum distinctly wider than long; the metanotum one-sixth the length of the propodeum; the spiracular peritremata of the propodeum subcircular. Wings, fig. 13. Fore wing (9 : 4), 1.5 mm long; submarginal, marginal, stigmal, and postmarginal veins approximately in ratio 22 : 6 : 4 : 7; hind wing (5 : 1), 0.9 mm long. Leg I, fig. 2. The coxa large, two-thirds the length of the femur; the femur more

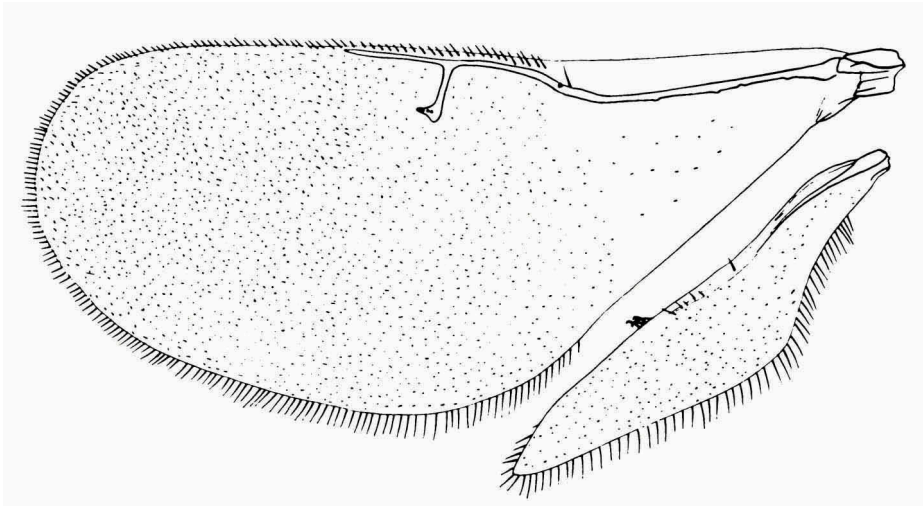


Fig. 13. *Pleistodontes blandus* spec. nov., wings,  $\times 75$ .

than twice as long as the tibia, with sparse and rather short pubescence; the tibia with three dorso-apical teeth, and many long hairs on the disk and at the ventral apex; the tarsus wide, with heavy ventral spines, the distal edges of the second to fourth segments produced; the segments approximately in ratio 10 : 3 : 2 : 2 : 9 (measured along the plantar edge). Leg II slender, with scattered long hairs; the coxa semiglobular; the trochanter short; the femur four times as long as the trochanter; the tibia as long as femur and trochanter combined; the tarsal segments with ventral spines, the fifth segment with some robust spines at the distal edge; the segments approximately in ratio 12 : 8 : 6 : 5 : 6. Leg III, fig. 1. The coxa nearly as large as the femur; the trochanter small, as usual; the femur with

long hairs; the tibia nearly as long as the femur, but narrower, with long hairs; the apical armature consisting of the usual ventral teeth; the tarsal segments with hairs and ventral spines; the segments approximately in ratio 12 : 7 : 6 : 5 : 8.

Gaster. The ovipositor one and a half times as long as the gaster.

Length of head, thorax, and gaster, 0.6, 0.9, and 0.9 mm, respectively.

Remark. — The dentation of the ventral ridges of the mandibular appendage is a common character of *P. blandus* and *P. froggatti* Mayr. The new species, however, is distinct by several characters of the legs in the female sex, and by the structure of the antenna in the male.

### *Pleistodontes froggatti* Mayr

*Pleistodontes imperialis*: Froggatt, 1900, p. 449-451, figs. 2-8 [descr. ♀, ♂ (not "supplementary form" <sup>1</sup>)], ex *Ficus macrophylla*, Bot. Grd., Sydney (Australia), biol. notes].

*Pleistodontes Froggatti* Mayr, 1906, p. 157-160 [descr. ♀, ♂, ex *Ficus macrophylla*, Bot. Grd., Sydney; = *P. imperialis*: Froggatt, nec Saunders]; Grandi, 1916<sup>1</sup>), p. 150-159, figs. II-V [descr. ♀, ♂, ex *Ficus macrophylla* Desf., Sydney, leg. F. Silvestri, 1912]; Grandi, 1928, p. 200 [type specimens studied].

*Pleistodontes froggatti*: Pemberton, 1921, p. 297-319, figs. 1-18 [biol. notes]; Muir, 1922, p. 12 [introd. from Australia into Hawaii]; Swezey, 1923, p. 304 [do.]; Swezey, 1924c, p. 348 [178 ♀, 33 ♂ from a single fig of Moreton Bay Fig, Honolulu, 19-II-1923]; Timberlake, 1924, p. 419 [established in Honolulu and Waimea (Hawaiian Is.)]; Timberlake, 1927, p. 552, fig. XXIII [introd. in Hawaiian Is.]; Pemberton, 1934, p. 379 [reached Kauai from Oahu (Hawaiian Is.)]; Sakimura & Linsford, 1940, p. 454 [ex *Ficus macrophylla*, Lanai (Hawaiian Is.)]; McKeown, 1944, p. 173-174, fig. [biol. note, figure of ♀].

Material. — Series ♀, ♂, ex *Ficus columnaris*, Sydney, leg. C. E. Pemberton, 16-I-1921; coll. H.S.P.A.; coll. Museum Leiden, no. 687: 10 ♀, 10 ♂; ♀, slide no. 687a, ♂, slide 687b.

Series ♀, ♂, ex *F. macrophylla*, Sydney, leg. C. E. Pemberton, 14-XII-1920; coll. H.S.P.A.; coll. Museum Leiden, no. 688: 2 ♀, 2 ♂; ♀, slide no. 688a, ♂, slide 688b.

### *Pleistodontes imperialis* Saunders

*Pleistodontes imperialis* Saunders, 1882, p. 163-164 [(descr.) ♀, ex *Ficus macrophylla*, Australia, also ex *Ficus australis*]; Saunders, 1883, p. 7, 8-10, Pl. II [descr. ♀, ♂, ex *Ficus macrophylla* and *F. australis*, New South Wales (Austr.), February, June]; Mayr, 1906, p. 159-160 [ex *Ficus rubiginosa* Desf., Garden Isl., Sydney, leg. W. W. Froggatt]; Timberlake, 1923, p. 200 [established in Honolulu (few specimens from fig, 16-VII-1922, leg. H. J. Lyon) from specimens liberated in I-1922]; Swezey, 1923, p. 304 [introd. from Australia into Hawaii]; Swezey, 1924a, p. 343 [established in a large tree of *Ficus rubiginosa*, Tantalus Road above Makiki Heights, XII-1922; 61 ♀, 24 ♂ + 155 good seeds in a single fruit]; Swezey, 1924b, p. 348 [established on a *Ficus*-tree at Manoa (Hawaiian Is.); must have reached there of themselves from the tree on

<sup>1</sup>) Girault (1939, p. 325) proposed *Pleistodontes mayri* as a new name for *Pleistodontes froggatti*: Grandi (1916) nec Mayr ("years earlier", evidently 1906 is meant). This new name appears to be quite redundant.

Makiki Heights (distance about a mile in an air line)]; Timberlake, 1924, p. 419 [introd. in 1922 from Sydney and recovered in July of the same year; distribution limited to a few trees in and near Honolulu]; Timberlake, 1927, p. 552 [introd. in Hawaiian Is.]; Grandi, 1928, p. 200-203, figs. XL, XLI [descr. ♀, ♂, specimens of Mayr, 1906]; Swezey, 1929, p. 218 [introd. in Manua (Hawaiian Is.)]; Pemberton, 1934, p. 379 [reached Kauai from Oahu (Hawaiian Is.)]; Sakimura & Linsford, 1940, p. 454 [ex *Ficus rubiginosa*, Lanai (Hawaiian Is.)]; Pemberton, 1944, p. 17 [ex *Ficus eugenioides* F. v. Mueller (perhaps merely a variety of *F. rubiginosa*), Manoa Valley, Honolulu, leg. E. L. Caum, VIII-1943].

*Austrodonates imperialis*: McKeown, 1944, p. 173 [error?].

Material. — Series ♀, ♂, ex *Ficus rubiginosa*, Sydney, leg. C. E. Pemberton, 28-31-XII-1920; coll. H.S.P.A.; coll. Museum Leiden, no. 690: 1 ♀, 1 ♂; ♀, slide no. 690a, ♂, slide 690b.

Series ♀, ♂, ex *F. rubiginosa* Desf. (det E. J. H. Corner), Adelaide, Hort. Bot., *Ficus* no. 5, 5-XII-1956, 6-II-1957; coll. Museum Leiden, nos. 434, 436; ♂, slide no. 434a, ♀, slides 434b, c.

Series ♀, ♂, ex *F. platypoda* A. Cunn. ex Miq. var. *petiolaris* Benth. (det. E. J. H. Corner), Adelaide, Hort. Bot., *Ficus* no. 1, 2-V-1957; coll. Museum Leiden, no. 433; ♂, slide no. 433a, ♀, slide 433b.

Series ♀, ♂, ex *F. platypoda petiolaris*, Childers (Queensland), leg. C. E. Pemberton, 10-VII-1921; coll. H.S.P.A.; coll. Museum Leiden, no. 689: 10 ♀, 10 ♂.

Series ♀, ♂, ex *F. eugenioides*, Sydney, leg. C. E. Pemberton, 5-III-1921; coll. H.S.P.A.; coll. Museum Leiden, no. 691: 1 ♀, 1 ♂; ♀, slide no. 691a, ♂, slide 691b.

Description. — Additional note. Grandi (1928), in his critical review of the Agaonidae, gave some additional descriptive notes on the specimens from Mayr's collection, and he figured some body parts. In addition to these, I present the following remarks, based on the study of the sample ex *Ficus rubiginosa* from Sydney.

Male. Head with spine-like hairs next to the antennal groove, much as in *P. froggatti*. Epistomal margin, fig. 16. Mouth parts, fig. 15. The maxillar lobes bear four apical hairs, the labium bears two hairs on the ventral lobe. Antenna, fig. 18. The scape not quite twice as long as wide, with many small hairs and two longer hairs on the axial surface; the length of the pedicel two-thirds the width of the scape; the third to the fifth segments annuli-form, with lateral hairs, the first moreover with a dorsal hair; the sixth and seventh segments forming a distinct club, with hairs and sensilla as in the figure.

The thorax is much more robust than figured in Grandi's fig. XLI, 1. The pronotum is about as long as wide anteriorly, and distinctly, although gradually, widening posteriorly; the mesonotum is as figured by Grandi; the metanotum and propodeum are much shorter: their combined length is three-quarters of the maximum width. Leg I, fig. 14. The tibia has two-thirds the length of the femur, the apical armature consists of three dorsal and two ventral teeth, stout hairs occur on the antaxial disk, a few shorter hairs on

the axial disk, and three spine-like hairs are situated on the axial apex, close to the place of insertion of the tarsus; the tarsus with ventral spines on the first and fifth segments, the intermediate segments glabrous, the segments approximately in ratio 10 : 3 : 2 : 3 : 12 (measured dorsally), the third segment does not reach the plantar edge, and sometimes is not quite separated from the second or fourth segments. Leg II: the tibia longer than the femur, though not as long as femur and trochanter combined; the tibia is moderately hirsute, especially along the dorsal margin, the ventral apical edge armed with a blunt spine; the tarsus with ventral spines, which gradually diminish in size towards the distal segments, the segments approximately in ratio 20 : 12 : 14 : 11 : 25. Leg III: the ventral spines of the tarsal segments, so distinctly visible in the specimens under study, were not figured by Grandi (fig. XLI, 3).

Gaster. Cerci of the tenth urite with two distinct claws. Penis but slightly dilated apically.

Length (head and thorax), 0.9 mm. Colour yellow-brown, the head much darker, almost chocolate-brown.

Female. The labium and maxillae of the usual type, with subapical hairs and a longitudinal row of hairs on the maxilla. Mandible with ten ventral ridges, the appendage with about twenty-five ridges. Leg I, fig. 17. Leg III: the tarsal segments with apical spines.

Length, 1.6 mm. Colour dark brown, the extremities lighter.

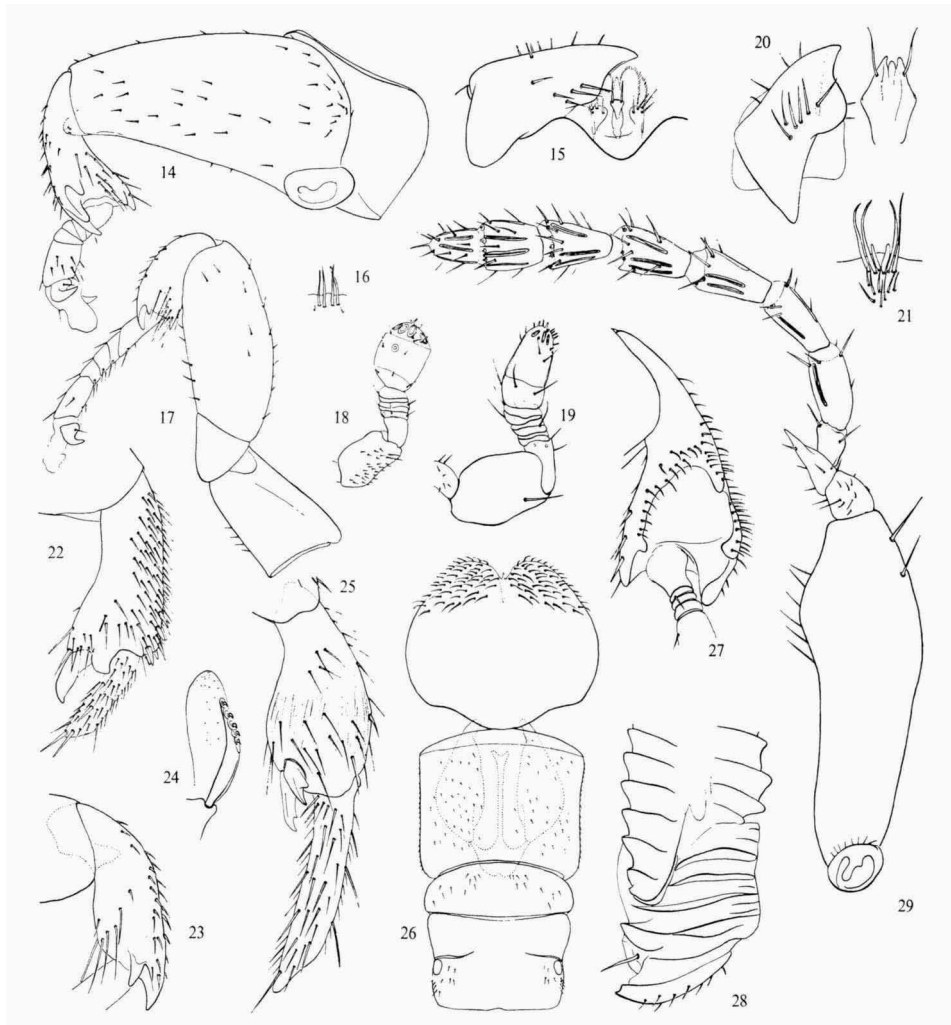
Remarks. — *Ficus platypoda* A. Cunn. ex Miq. var. *petiolaris* Benth. is the same as *F. obliqua* Forst. f. var. *petiolaris* (Benth.) Corner; *Ficus eugenioides* F. von Mueller is *F. obliqua* Forst. f.

The wasps from *F. obliqua* and those from *F. rubiginosa* are very similar, but they differ in size. I prefer not to separate the forms, however, until more material gives a better insight into the variability of the species.

From *Ficus obliqua* Forst. f., Grandi (1931, p. 8) recorded *Blastophaga greenwoodi* Grandi. Wiebes (1963, p. 99) suggested that the host of *B. greenwoodi* may have been *F. prolixa* Forst. f. There is no doubt, however, that W. Greenwood no. 296, the herbarium material documenting Grandi's record, is *F. obliqua* Forst. f. (Corner, 1963, in litt.). More material from *F. obliqua* and *F. prolixa*, preferably from Fiji, is needed to solve the problem of the double record from *F. obliqua*.

#### **Pleistodontes rieki spec. nov.**

Material. — Eight ♀, 7 ♂, ex *Ficus xylosyca* Diels var. *cylindrocarpa* (Diels) Corner (det. E. J. H. Corner), Bougainville I., leg. E. J. H. Corner, N.G.F. no. 13472; coll. Museum Leiden, no. 559; holotype, ♂, slide no 559a, allotype, ♀, slide 559b, paratypes, ♀ ♂, slides 559c-e.



Figs. 14-18. *Pleistodontes imperialis* Saunders. 14, male fore leg, antaxial aspect; 15, male trophi; 16, male, epistomal margin; 17, female fore leg, antaxial aspect; 18, male antenna, dorsal aspect.

Figs. 19-29. *Pleistodontes rieki* spec. nov. 19, male antenna, dorsal aspect; 20, male trophi; 21, male, epistomal margin; 22, tibia and metatarsus of male hind leg, antaxial aspect; 23, female fore tibia, antaxial aspect; 24, clasper of male genitalia; 25, tibia and metatarsus of female hind leg, antaxial aspect; 26, male head and thorax; 27, tibia and tarsus of male fore leg, antaxial aspect; 28, female mandible, ventral aspect (appendage partly omitted); 29, female antenna, axial aspect. Figs. 26,  $\times 50$ ; 14, 16-23, 25, 27-29,  $\times 120$ ; 15, 24,  $\times 190$ .



? Fragments of 6 ♀, ex *F. xylosyca* Diels (det. E. J. H. Corner), Papua, leg. C. E. Carr, no. 14050; coll. Museum Leiden, no. 440; ♀, slide no. 440a.

Description. — Male. Head slightly wider than long (fig. 26, the head is tilted anteriorly), with rather strong spines in the anterior part next to the wide antennal groove, and, ventrally, next to the hypostomal margin. Eyes small, situated on the lateral sides close to the insertions of the mandibles. Epistomal margin (fig. 21) with a set of robust hairs, and some shorter hairs. Trophi, fig. 20. Mandible with a prominent ventral process, and with long hairs on the disk. Maxilla with one lateral hair. Antenna, fig. 19. The scape one and a half times as long as wide, not quite twice as long as the pedicel; the third to fifth segments annuliform; the sixth and seventh segments forming the club, the sixth about half as long as the seventh, and but little wider. The scape with one long dorsal hair, and three long hairs on the ventral surface; the pedicel with two ventro-lateral hairs near the apex; the annuli with some long hairs: the first with one ventro-lateral, the second with one ventro-lateral and one ventral, and the third annulus with two ventral hairs, one of which is situated at the axial margin; the sixth segment with four long hairs: two ventrals and two dorsals; the apical segment with four subapical hairs, all of which are visible in dorsal view, and a series of sensilla and short excrescences near the apex.

Thorax, fig. 26. The pronotum nearly rectangular, the anterior margin faintly rounded, not much wider than long, finely hirsute; the mesonotum slightly narrower, and not half as long, with short hairs on the disk; the metanotum about as large as the mesonotum, but distinctly rectangular, incompletely separated from the propodeum; the propodeum as wide as the metanotum, and a little longer, with tufts of hairs beneath the spiracles. Leg I, fig. 27. The coxa large, quadrangular; the femur one and a half times as long as the tibia, with sparse hairs; the tibia heavily pubescent on the ant-axial disk and along the dorsal margin, the antaxial excavation bordered by three dorsal and two ventral teeth, the ventral margin and the antaxial, dorsal margin with some very stout spines; the tarsal segments approximately in ratio 5 : 1 : 1 : 1 : 5. Leg II rather robust, the coxa subsemiglobular; the trochanter long, two-thirds the length of the femur, which is distinctly shorter than the tibia; the tarsal segments in ratio 14 : 7 : 6 : 5 : 12. Leg III, fig. 22. The coxa robust, about as large as the femur; trochanter half as long and much narrower; these segments hirsute; the tibia four-fifths of the length of the femur, hirsute along the dorsal margin, with heavy spines near the apex, the apical armature consisting of three teeth, the axial one of which is movable; the tarsal segments approximately in ratio 8 : 5 : 4 : 3 : 8.

Gaster. Claspers (fig. 24) of the genitalia with a row of five small spines.

Length, 1.2 mm. Colour yellow-brown, the head darker.

Female. Head slightly longer than twice the width across the compound eyes, its maximum height two-thirds of the width; finely hirsute. Eyes small, the longitudinal diameter less than one-third of the length of the cheek, and five times as long as the temple. Epistomal process with two stout hairs. Mandible (fig. 28) with five large, prominent ventral ridges. Mandibular appendage long, with approximately thirty-five ventral lamellae, which are only in two places produced into teeth. Labium not present in the specimens studied. Maxilla with a longitudinal row of four to six hairs at half length, and one long apical hair. Antenna (fig. 29) eleven-segmented; the scape four times as long as its maximum width, eight times as long as the pedicel; the third segment with the pointed appendage reaching to the base of the fifth segment; the fourth segment half as long as the fifth, with distal hairs; the fifth to eighth segments subequal; the ninth to eleventh segments gradually diminishing in length; the fifth segment with five long sensilla, the sixth and eleventh with four, the seventh to tenth segments with six or seven long sensilla; the sixth to tenth moreover with one or more circular pits in the distal part. All segments with rather short hairs.

Thorax nearly glabrous. The pronotum one and a half times as wide as long, finely striate in the anterior part, with a few very small hairs; the scutum slightly longer than wide, with one hair near each of the caudal corners; length of the scutellum two-thirds of its maximum width, five to seven hairs occur on each side of the mid-line; the metanotum not very short, with a few hairs in the lateral parts; the propodeum four times as long as the metanotum, with one hair above the oblong, spiracular peritremata, and some ten long hairs below. Fore wing (11 : 4), 2.1 mm long; submarginal, marginal, stigmal, and postmarginal veins in ratio 39 : 11 : 7 : 12; the stigmal vein with four pustules in a straight row, the submarginal vein with three pustules; hind wing (7 : 2), 1.2 mm long. Leg. I, fig. 23. The coxa more than half as long as the femur; the trochanter small; the femur with very small hairs along the dorsal edge, finely striate over its whole length; the tibia half as long as the femur, with two dorso-apical teeth, many stout spine-like hairs occur along the dorsal edge, and several long hairs are situated on the ventral surface; the tarsus with hairs and stout apical spines, the segments approximately in ratio 14 : 5 : 3 : 4 : 9. Leg II slender; the tibia longer than the femur, but not as long as the femur and trochanter combined; the femur and the tibia striate, especially in the apical parts; the tibia with one ventral spur; the tarsal segments approximately in ratio 14 : 6 : 5 : 4 : 7, with hairs and ventral spines. Leg III, fig. 25. The coxa large, with ventral hairs, glabrous laterally and dorsally, striate in

the dorso-basal corner; the trochanter small, with a few hairs situated in a ventral pit; the femur with long hairs, striate; the tibia two-thirds of the length of the femur, with rather long hairs, striate, both ventral teeth bidentate, the antaxial one more robust than the other; the tarsal segments approximately in ratio 8 : 5 : 4 : 3 : 4, with hairs and ventral and dorsal spines.

Gaster. The ovipositor two-thirds of the length of the gaster.

Length, 2.7-3.2 mm. Colour brown, the head and the dorsal sclerites of the thorax darker.

Remark. — The female specimens of sample no. 440 are of the same facies as those of coll. no. 559, but they differ in the following details: the antennal segments with more sensilla; the tibia of the fore leg more heavily spinose along the dorsal edge, the second, third, and fifth tarsal segments relatively longer; the first tarsal segment of the hind leg relatively much longer.

The specimens are in a very bad state of preservation, and they could not be studied in more detail. Tentatively, the sample from New Guinea is referred to *P. rieki*, but it may prove to deserve of subspecific or specific distinction when new material becomes available.

*Pleistodontes rieki* is named after Mr. E. F. Riek, Principal Research Officer, C.S.I.R.O., Canberra.

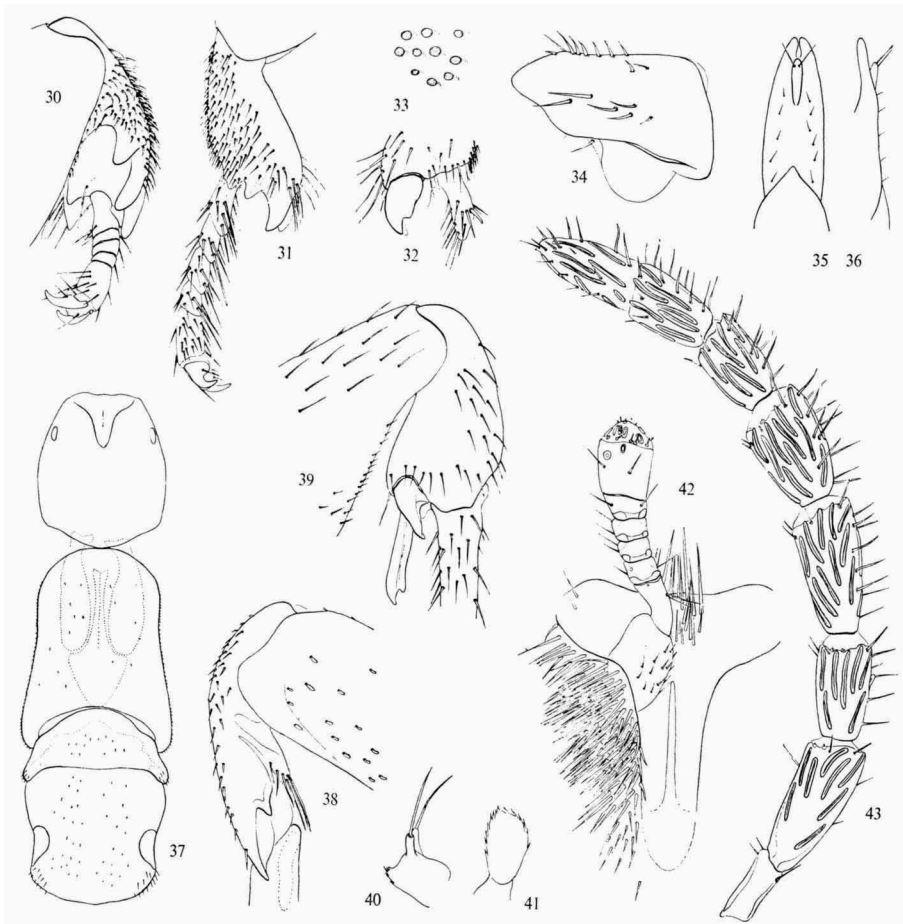
#### ***Pleistodontes plebejus* spec. nov.**

Material. — Series ♀, 2 ♂, ex *Ficus hesperidiiformis* King (det. E. J. H. Corner), Lae (Terr. New Guinea), leg. E. J. H. Corner, 23-IX-1960; coll. Museum Leiden, no. 556; holotype, ♂, slide no. 556a, allotype, ♀, slide 556b, paratype, ♀, slide 556c.

Series ♀ (immature), 5 ♂, ex *F. sclerotiara* Diels (det. E. J. H. Corner), Papua, leg. R. D. Hoogland, no. 3730; coll. Museum Leiden, no. 442; ♂, slide no. 442a, ♀, slide 442b.

Description. — Male. Head (fig. 37) not much longer than its maximum width, slightly narrower posteriorly at the angular corners, and much narrower anteriorly; with heavy pubescence (fig. 42) on the anterior dorsal and ventral surfaces. Antennal groove narrow, abruptly widening anteriorly. Eyes large, situated on the lateral sides, well spaced from the insertions of the mandibles. Epistomal margin, fig. 42. Mandible (fig. 34) robust, the ventral process is less prominent than in *P. rieki*. The labium and maxillae could not be studied in detail, due to the scarcity of the material; some sketches are given in figs. 40 and 41. Antenna, fig. 42. The scape nearly twice as long as the pedicel, one and a half times as long as wide; the third to sixth segments subquadrangular, about a third the length of the pedicel, the segments gradually diminishing in length, but increasing in width; the

apical segment large, the length four-thirds the maximum width. Scape with many short hairs on the antaxial half, dorsally as well as ventrally; the pedicel with two long antaxial hairs; the third to sixth segments with three or two long ventral hairs, the sixth segment moreover with two dorsal and two ventral hairs, and with many sensilla both on the dorsal disk and on the apical part, and short excrescences.



Figs. 30-43. *Pleistodontes plebejus* spec. nov. 30, tibia and tarsus of male fore leg, antaxial aspect; 31, do. of hind leg; 32, tip of tibia, and metatarsus of male hind leg, axial aspect; 33, subcircular pits of female pronotum; 34, male mandible, ventral aspect; 35, female labium and maxillae, ventral aspect; 36, do., lateral aspect; 37, male head and thorax (pubescence of head omitted); 38, tip of femur, and tibia of female fore leg, antaxial aspect; 39, do. of hind leg; 40, male labium, lateral aspect; 41, male maxilla, ventral aspect; 42, male, antennal groove, antenna, and epistomal margin; 43, funicle of female antenna, antaxial aspect. Figs. 37,  $\times 40$ ; 30-32, 35, 36,  $\times 75$ ; 34, 38, 39, 42, 43,  $\times 120$ ; 33, 40, 41,  $\times 190$ .

Thorax, fig. 37. The pronotum rounded anteriorly, as long as wide posteriorly, with short, sparse pubescence, finely hirsute along the lateral margins; the mesonotum gradually widening posteriorly to the posterior width of the pronotum, with short, sparse pubescence on the disk, and with some longer hairs in the posterior corners; the metanotum almost completely fused with the propodeum, slightly narrower than the posterior margin of the mesonotum; the pronotum is still narrower and, combined with the metanotum, more than twice as long as the mesonotum, some short hairs occur on the disk, and tufts of longer hairs are found behind the rather large spiracular peritremata. Leg I, fig. 30. The coxa large, as usual; the femur nearly twice as long as the tibia including the apical armature, with some hairs along the dorsal margin, nearly glabrous on the disk; the tibia with heavy pubescence, the apical armature consisting of three dorsal, and two ventral teeth; the first tarsal segment with one dorsal hair and some ventral, the next three segments with dorsal hairs only, the fifth with dorsal, lateral, and ventral hairs; these segments approximately in ratio 12 : 5 : 4 : 4 : 10. Leg II very slender, hirsute; the trochanter more than half as long as the femur, which is as long as the tibia; the tarsal segments approximately in ratio 2 : 1 : 1 : 1 : 2. Leg III, fig. 31. The coxa robust, as large as the femur; the femur with rather long pubescence along the dorsal and ventral margins, almost glabrous on the disk; the tibia, including the apical armature, about three-fifths of the length of the femur, heavily pubescent, with some longer hairs in the ventro-apical corner, the armature consisting of two ant-axial teeth, the ventral one of which is the larger, and one axial, movable tooth, which is faintly bidentate at apex (fig. 32); the tarsus spinose, especially on the ventral surface, the segments approximately in ratio 10 : 5 : 6 : 5 : 8.

Gaster. Claspers of the genitalia without spines.

Length (head and thorax), 2.2 mm. Colour brown, the mid leg and the hind femora a trifle more yellowish.

Female. Head about thrice as long as wide across the compound eyes, its maximum height subequal to the width; the face with many small pits, as if pock-marked. Longitudinal diameter of the eye three-quarters of the length of the temple, and two-fifths of the cheek. Epistomal lobes rounded, with stiff hairs. Mandible of the same type as in *P. rieki*, but with eight ventral ridges; the appendage with approximately seventy-five ventral, bidentate lamellae. Labium and maxillae, figs. 35, 36. The labium bears two subapical hairs, the maxilla a row of five or six hairs. Antenna, fig. 43. The scape very long, with a very prominent ventral process; the pedicel and the third segment as in *P. rieki*; the fourth segment half as long as the fifth,

with some distal hairs; the fifth segment nearly one and a half times as long as the sixth, eighth, and eleventh segments, and about as long as the seventh; the ninth and tenth segments distinctly shorter. All segments with rather robust hairs, especially along the dorsal margin, the segments with fifteen to twenty oblong sensilla, the eleventh segment moreover with some shorter sensilla at the antaxial surface.

Thorax. The pronotum approximately as wide as long, the dorsal disk, especially in the anterior part, with many subcircular pits (fig. 33) as on the face, lateral parts with small hairs; the scutum nearly one and a half times as long as wide, with three hairs in each of the caudal corners; scutellum about as long as wide anteriorly, much wider posteriorly, with some thirty hairs; metanotum rather narrow, with five hairs in each of the lateral parts; propodeum very large, more than five times as long as the metanotum, with short oval spiracular peritremata, some eight long hairs occur on the axial side of the peritremata, and about thirty-five below, moreover nearly twenty long hairs are found on the dorsal disk. Fore wing (5 : 2), 2.7 mm long; submarginal, marginal, stigmal, and postmarginal veins approximately in ratio 50 : 15 : 8 : 17; the stigmal vein with three pustules, the submarginal vein with four; hind wing (7 : 2), 1.5 mm long. Leg I, fig. 38. The coxa two-thirds the length of the femur; the trochanter small; the femur with small hairs along the dorsal margin, and with many small pits on the antaxial surface, similar to those of the face and the pronotum, but more oval in shape; the tibia, including the apical armature, not quite half as long as the femur, and as long as the first two tarsal segments combined, with stout hairs and spines along the dorsal margin and with long hairs on the ventral apex, the armature consisting of two teeth; the tarsal segments approximately in ratio 16 : 6 : 7 : 5 : 9, with hairs and spines. Leg II slender, relative proportions much as in *P. riei*; the tarsal segments approximately in ratio 19 : 14 : 12 : 8 : 12. Leg III, fig. 39. The coxa two-thirds the length of the femur; the trochanter small; the femur with long hairs in the dorsal part, the margins of the ventral excavation finely hirsute; the tibia half as long as the femur, and two-thirds the length of the metatarsus, with long hairs and two ventral bidentate spurs, the axial one of which is about one third the length of the metatarsus; the tarsus with hairs and spines, and with a comb of spine-like hairs along the plantar edge, the segments approximately in ratio 14 : 8 : 7 : 6 : 6.

Gaster. The ovipositor two-thirds the length of the gaster.

Length, 4.7 mm. Colour dark brown, the ventral surfaces and the extremities lighter.

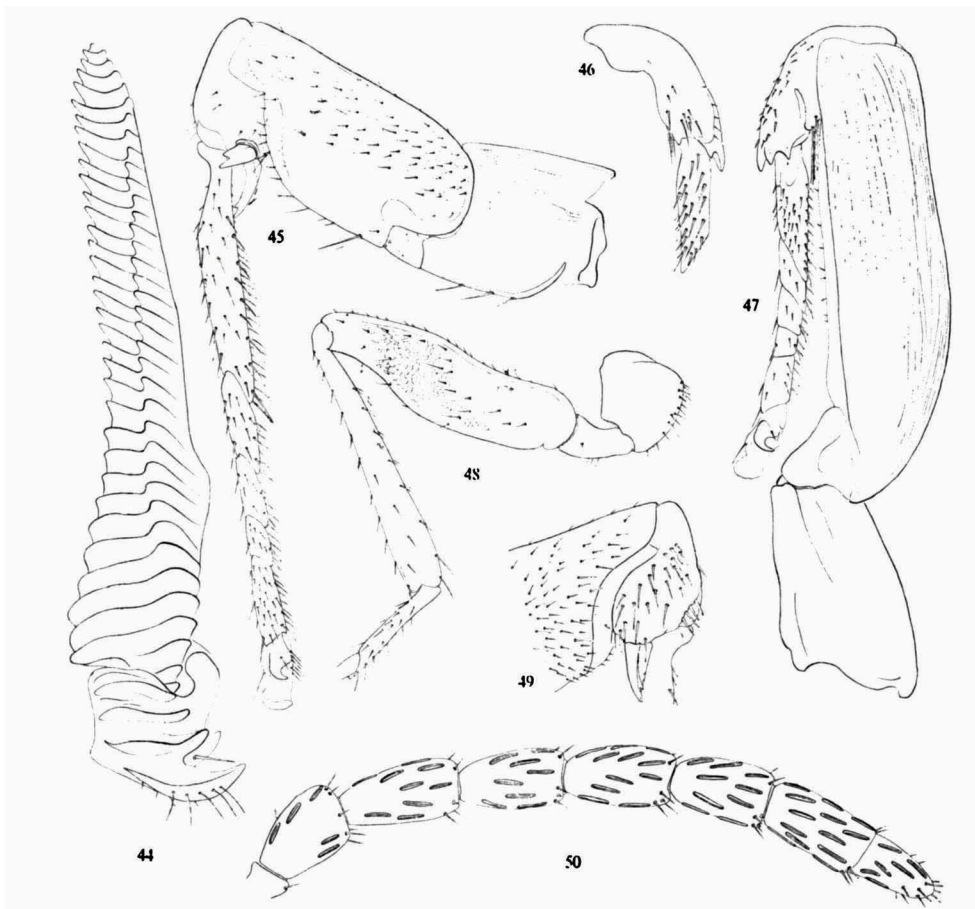
Remark. — In a forthcoming paper, Corner will reduce *Ficus sclerotiara* Diels to *F. hesperidiiformis* King.

*P. plebejus* is at once recognizable by the "pock-marked" face of the female, and by the long funicular segments of the male antenna.

***Pleistodontes immaturus* spec. nov.**

Material. — Two immature ♀, ex *Ficus sterrocarpa* Diels (det. E. J. H. Corner), Lala Valley (S. E. New Guinea), 1800 m, leg. C. E. Carr, 29-II-1936, no. 15864; coll. Museum Leiden, no. 441; holotype, ♀, slide no. 441a.

Description. — Female. Head slightly longer than twice the width across



Figs. 44-50. *Pleistodontes immaturus* spec. nov., female. 44, mandible, ventral aspect; 45, hind leg, antaxial aspect; 46, tibia and metatarsus of fore leg, axial aspect; 47, fore leg, antaxial aspect (pubescence of coxa and femur omitted); 48, mid leg, antaxial aspect (tarsus partly omitted); 49, hind tibia, axial aspect; 50, funicle of antenna, antaxial aspect. Figs. 44-49,  $\times 75$ ; 50,  $\times 120$ .

the compound eyes; the rostral part with small pits, as in *P. plebejus*. Longitudinal diameter of the eye as long as the temple, and one-third of the length of the cheek. Epistomal process, in facial view, trilobate, with two stiff hairs. Mandible, fig. 44; the appendage with approximately thirty-five ventral, bidentate lamellae. Labium and maxillae of the normal type, the maxilla with a longitudinal row of five or six short hairs, and one longer, subapical hair. Antenna (fig. 50) eleven-segmented; the scape very long, with a very prominent, ventral, hyaline ridge; the pedicel and third segment small, the appendage short but sharply pointed; the fourth segment small, with apical hairs; the fifth segment twice as long as the fourth; the sixth longer than the fifth; the seventh to tenth segments subequal, intermediate in length between the fifth and the sixth segments; the eleventh segment shorter than the fifth. The fifth to tenth segments with apical hairs, and with fifteen to twenty rather short sensilla in irregular rows; the apical segment with eleven sensilla.

Thorax with only a few scattered hairs. The pronotum as long as wide, longitudinally striate; the scutum very narrow, nearly twice as long as wide; the scutellum not much wider, but about half as long; the metanotum one-fifth the length of the propodeum; the propodeum transversally striate on the disk, the spiracular peritremata very large. Wings not studied. Leg I, fig. 47. The coxa not quite half as long as the femur; the antaxial surface of the femur finely striate, especially in the dorsal part, with a few hairs, the axial surface rather closely pubescent; the tibia distinctly shorter than half the length of the femur, with short hairs on the dorsal surface, and longer hairs on the ventral protuberance and on the axial surface (fig. 46), the apical armature consisting of four dorsal teeth; the tarsus with hairs and slender ventral spines, the segments approximately in ratio 12 : 4 : 4 : 3 : 5. Leg II (fig. 48); the coxa and trochanter small, as usual; the femur as long as the tibia, but much wider, with sparse pubescence, and finely reticulate in the apical part; the tibia with scattered hairs, especially along the dorsal and ventral margins; the tarsus with short hairs and slender ventral spines, the segments approximately in ratio 22 : 20 : 20 : 7 : 14. Leg II (fig. 45): the coxa and femur robust, finely striate in the dorsal part; the femur with hairs on the dorsal, antaxial surface, more densely, but shorter pubescent on the axial surface, the ventro-apical margin hyaline, with marginal hairs; the tibia half as long as the femur, almost glabrous antaxially, denser pubescent axially (fig. 49), the apical armature consisting of two ventral teeth, both bidentate at apex, the axial one of which has not quite one-quarter the length of the metatarsus; the tarsus with hairs and slender ventral spines, the segments approximately in ratio 24 : 9 : 7 : 4 : 9.



Gaster. The second abdominal segment (the first segment of the gaster) is rather robust. The ovipositor one-third the length of the gaster.

Length, approximately 4.5 mm. Colour blackish brown.

Remark. — Although the specimens from sample no. 441 are immature, the new species could be described in some detail. I relaxed the type specimen (441a) in a very dilute solution of caustic potash in water for 48 hours, and gently peeled off the envelope. The specimen appeared to be quite easy to be dissected by then, but of course the colour had faded away for the greater part.

*P. immaturus* is at once recognizable by the number and shape of the antennal sensilla, by the shape of the fore and hind femora and tarsi, and by the armature of the fore tibia.

#### HOST RECORDS AND CLASSIFICATION

The *Ficus* mentioned in the present paper as hosts of *Pleistodontes*, were classified by Corner (1960) in four subseries of the section *Malvanthera* (table I). Grandi (1952, p. 67) recorded *P. regalis* Grandi from *Ficus pleurocarpa* F. v. Mueller. The sample from *Ficus vasculosa* Wall. ex Miq., in a previous paper (Wiebes, 1963, p. 100) erroneously recorded as consisting of a species of *Pleistodontes*, appears to belong to *Blastophaga* Gravenhorst.

TABLE I  
*Ficus* and *Pleistodontes*

<i>Ficus</i> Linn.	Agaonidae
section <i>Malvanthera</i> Corner	<i>Pleistodontes</i> Saunders
series <i>Malvanthereae</i>	
subseries <i>Eubracteatae</i> Corner	
subseries <i>Malvanthereae</i>	
<i>Ficus glandifera</i> Summerh.	<i>P. blandus</i> spec. nov.
<i>Ficus macrophylla</i> Desf.	<i>P. froggatti</i> Mayr
subseries <i>Platypodeae</i> Corner	
<i>Ficus rubiginosa</i> Desf.	<i>P. imperialis</i> Saunders
<i>Ficus obliqua</i> Forst. f.	<i>P. imperialis</i> Saunders
subseries <i>Hesperidiiformes</i> Corner	
<i>Ficus xylosyca</i> Diels	<i>P. rieki</i> spec. nov.
<i>Ficus hesperidiiformis</i> King	<i>P. plebejus</i> spec. nov.
<i>Ficus pleurocarpa</i> F. v. Mueller	<i>P. regalis</i> Grandi
series <i>Cyclanthereae</i> Corner	
<i>Ficus sterrocarpa</i> Diels	<i>P. immaturus</i> spec. nov.

The female wasps from the subseries *Malvanthereae* have the mandibular appendage with denticulate ridges. The other species have lamellar ridges, with the exception of *P. regalis*, which, moreover, is by various other characters (e.g., the armature of the male and female fore and hind legs, the male antenna, etc.) connected with *P. froggatti* and *P. blandus*.

*P. imperialis*, in its general facies, is close to *P. froggatti* and its relative; *P. rieki*, *P. plebejus*, and *P. immaturus* are distinctly larger and more robust. The peculiar shape of the female fore and hind legs distinguish *P. immaturus* from the other species.

Tentatively, I would divide *Pleistodontes* into three species groups, viz. the *P. froggatti*-group, including *P. froggatti*, *P. blandus*, and *P. regalis*; the *P. imperialis*-group with *P. imperialis* only; and the *P. rieki*-group with *P. rieki*, *P. plebejus*, and *P. immaturus*. This entomological system does not confirm to the botanical system; both, however, are to be regarded as tentative classifications.

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