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REVIEW OF THE GENUS *GASTRODES**

(Lygaeidae, Hemiptera)

BY

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Species of the genus *Gastrodes*, although rare in collections, have been turning up in increasing numbers in recent years due primarily to the interest of forest entomologists. This has resulted in the recent excellent contributions to our knowledge of the life history and economic status of the two European species, *abietum* Bergroth and *grossipes* Degeer, by Holste (1922), Nägeli (1933), and Aitkins (1936). As there has been but little systematic work published on this group from a world standpoint during the past fifty years it seemed that a synoptic key and phylogenetic arrangement might be of value at this time. Complete synonymy and bibliography have been given by Reuter (1888), Oshanin (1906), and Van Duzee (1917) and need not be repeated here.

Appreciation is due to all of those who have so generously supplied material as listed under the various species, and especially to Mr. H. G. Barber who has kindly read over parts of the manuscript, and checked them against specimens in his own collection. A visit during the summer of 1937 to the various collections of the United States and Eastern Canada made possible the study of type and other material in the United States National Museum, the Canadian National Collection, and the Provincial Museum in Quebec.

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Genus *Gastrodes* Westwood, 1840

Body ovate to oblong-ovate, flattened; sparsely to distinctly punctate above and beneath; appendages and venter sparsely, finely pilose. Length of head subequal or slightly longer than its width including eyes; tylus distinctly surpassing juga; bucculae prominent, forming plates on either side of the tylus, almost reaching to its apex. Eyes not touching anterior angles of pronotum; ocelli more distant from each other than from eyes. Antennae inserted directly in front of the eyes and slightly below a line drawn from middle of eyes to apex of head; as long as distance from apex of head to apex of scutellum or apex of commissure of clavus; first segment one-half or less the length of second; second, third, and fourth segments subequal, or the second slightly the longest. Rostrum slender, variable in length from middle coxae to middle of second abdominal segment; inserted in a broad furrow with arcuate or angulate sides continuous with the bucculae; second segment the longest, and fourth segment shortest.

Pronotum transverse; anterior margin more or less impressed, simulating a collar; lateral margins strongly converging anteriorly, sinuate to rectilinear, the anterior and posterior angles gently rounded; divided behind middle by a more or less distinct, transverse depression into two lobes; lateral margins slightly to distinctly lamellate especially at level of transverse depression, sometimes feebly reflexed.

Scutellum very flat; slightly broader than long, or equilateral; depressed at center of disk.

Hemelytra exceeding tip of abdomen, almost or quite concealing connexivum; claval suture depressed; lamellate basal third of costal margin of corium strongly depressed at inner margin, feebly to strongly reflexed laterally, the median furrow (emboliar fracture) of corium extending as far as margin, but curved away from the margin as it proceeds posteriorly; commissure of clavus more than half length of scutellum; membrane with four or five distinct, sinuate, longitudinal veins.

Sterna and pleura strongly punctate except for smooth mesosternum at middle, and finely granular area about the ostiolar canal; mesosternum longitudinally sulcate; metasternum less so. Posterior margin of metapleuron lamellately produced, its outer angle sometimes moderately produced, and the inner angle in the males of some species roundly produced and narrowly reflexed.

Anterior femora strongly incrassate, especially in the male; two rows of fine teeth below, the outer row sometimes obsolescent, the inner row with two median or sub-apical, larger teeth, these large spines either directed at right angles, obliquely, or apically with respect to the longitudinal axis of the femur. Anterior tibiae curved more strongly in the males than in the females. Middle and hind femora scarcely incrassate, with three or four very small teeth subapically below. Basal segment of posterior tarsus subequal in length to second and third segments together.

Abdominal spiracles all ventrally located. Third ventral suture almost straight and reaching lateral margin.

General coloration ochraceous to the more usual ferrugineous, or even piceo-ferrugineous to black, the head and thorax, excepting posterior lobe of pronotum, always black.

Genotype:—*Cimex abietis* Linnaeus.

The genus *Gastrodes* has led a checkered career nomenclatorially. Schilling first restricted the group under the name *Platygaster* in 1829. As this name was preoccupied in the Hymenoptera a series of names was subsequently proposed by various authors to replace it. *Gastrodes* was the first of these, proposed by Westwood in 1840 with *Cimex abietis* Linnaeus as the type. Subsequently Gistel proposed *Oimoctes* in 1848, Flor proposed the name *Ancylopus*, (1860), which was preoccupied in the Coleoptera, and Fieber proposed

Homalodema in 1861. These last are, of course, unnecessary if we follow the insect described by Westwood as *Gastrodes* (see Panzer, 1805). If, however, we follow the name *abietis* (= *erraticus* Fabricius fide Horvath, 1898), we must then call all of our *Eremocoris* (type *erraticus* Fabricius 1794) species *Gastrodes* and use the next oldest name, *Oimoctes*, for our *Gastrodes* species. Such a procedure is in accord with a strict interpretation of the opinion of the International Commission on Zoological Nomenclature which states that in such cases, "it is to be assumed that the author's determination of the species is correct." However, we know, in the present case that the author's determination is incorrect, for Westwood refers to Panzer's beautifully colored figure, which clearly represents *abietis* Auct. nec Linnaeus. Cases of this kind have been exhaustively discussed by the International Commission (see Opinion 65) with the recommendation that individual cases be submitted to the Commission for consideration. The change to *Oimoctes* would confuse all records of two of our old and well established genera of Lygaeidae. Moreover the description of the genus *Gastrodes* would not agree with any of the species included in it. The name *Gastrodes* is being used incorrectly at the present time for a group of Ctenophores.

The most reliable specific characters in this group appear to be the length of the rostrum, antennal proportions, shape of pronotum, degree that lamellate portions of pronotum and corium are reflexed, incrassation and spines of front femora, size, and general coloration.

KEY TO THE SPECIES OF *GASTRODES*¹

1. Basal antennal segment short, one-third length of second segment, scarcely exceeding apex of head. Clavus and inner corium ochraceous except for an arcuate, fuscous fascia *abietum*
- Basal antennal segment nearly one-half length of second, distinctly surpassing apex of head. Corium ferruginous or darker, unicolorous . . . 2
2. Length of head subequal to width including eyes. Posterior inner angles of metapleura not produced or reflexed. Average size small, approximately 5 to 7.3 mm. in length. Males with ante-apical spines of front femora directed at right angles or slightly obliquely to the main axis, not strongly bent dorsally and apically 3
- Head longer than wide including eyes. Antennae black. Posterior inner angles of metapleura in males roundly produced and distinctly reflexed. Larger species, approximately 7 to 8.5 mm. in length. Males with front femora greatly enlarged, the ante-apical spines strongly bent and directed dorsally and apically 6
3. Lateral margins of pronotum scarcely or not at all sinuate at level of transverse impression, appearing rectilinear or even slightly arcuate. Rostrum attaining intermediate coxae, the first segment reaching about to level of middle of eyes *pacificus*
- Lateral margins of pronotum distinctly sinuate at level of transverse impression 4

¹ *Walleyi* n. sp. has not been included because the damaged condition of the type does not permit its exact placement. It is the only known species with an apically bifid femoral spine, and the only positively known specimen from Eastern North America.

4. Antennae black, short, equal in length to distance from apex of head to apical third of scutellum. Sides of pronotum not regularly narrowing anteriorly, the anterior lobe broader with sides subparallel at middle. Disk of pronotum entirely black except on lateral margins.....*remotus*
- Antennae ferrugineous at least in part, at least as long as distance from apex of head to tip of scutellum. Sides of pronotum rather strongly and regularly narrowed from base to apex, its disk ferrugineous on posterior lobe.....5
5. Antennae long, as long as distance from apex of head to apex of commissure of clavus, the first segment surpassing apex of head by more than half its length. Lamellately expanded margins of coria feebly but distinctly reflexed. Body comparatively feeble and slender.....*grossipes*
- Antennae shorter, as long as distance from apex of head to apex of scutellum, the first segment surpassing apex of head by less than half its length. Lamellately expanded margins of coria scarcely reflexed. Body more rounded and robust.....*japonicus*
6. Rostrum distinctly surpassing posterior coxae, reaching at least to middle of first abdominal segment. Corium, venter, and base of pronotum ferrugineous.....*conicola*
- Rostrum not or scarcely exceeding posterior coxae.....7
7. Corium, venter, and base of pronotum piceo-ferrugineous to black. Lateral margins of pronotum rectilinear.....*arizonensis*
- Corium, venter, and basal lobe of pronotum much paler, ferrugineous. Lateral margins of pronotum feebly sinuate at level of transverse impression.....*intermedius*

PHYLOGENETIC RELATIONSHIPS

Abietum was separated generically from *grossipes* by Stål (1872) as follows:

"Articulo primo antennarum apicem capitis paullo superante; femoribus anticis marium subtus antice spina valida nutante armatis; acetabulis posticis marium postice in lobum apice uncinatum ampliatis; segmento ventrali quinto feminarum postice angulatim emarginato, emarginatura basin segmenti subattingente."

Although this generic separation has not been generally accepted *abietum* is clearly an element distinct from the *grossipes-japonicus* group. Furthermore *pacificus*, due to its larger size and shorter rostrum, represents a slight departure from the "typical" *grossipes* group, and forms a transition toward the very distinct *intermedius-arizonensis-conicola* group. These last species, besides their larger size, flatter dorsal surface, longer head, and darker color have the anterior femora of the males greatly incrassate, while the spine on apical third of inner margin projects apically or very obliquely from an expanded and upturned plate, which forms a deep dorsal hollowing just within its margin. Such a striking character, although only occurring in one sex, sets these three species apart from their

congeners. *Walleyi* n. sp. is an extreme form of this group. *Remotus* n. sp. is entirely separate and represents still another stock which may prove to be richly represented in the region of South China.

SYNOPTIC DESCRIPTIONS OF SPECIES

1. *Gastrodes abietum* Bergroth, 1914

Body very much flattened above. Punctures fine and rather sparse. Surface, especially of head, pronotum, and scutellum, highly polished. Head slightly longer, eyes included, than broad, 22::20. Antennae equal in length to distance from apex of head to tip of scutellum, the basal segment short, one-third length of second, scarcely exceeding apex of head; proportion of segments one to four as $7\frac{1}{2}$:24:20:19. Rostrum attaining posterior coxae, its basal segment reaching level of posterior margins of eyes, not attaining base of head. Pronotum with lateral margins carinate throughout their length, lamellately expanded at level of transverse impression and often slightly reflexed at this level; posterior margin shallowly but distinctly emarginate. Lamellately expanded outer margins of coria feebly reflexed only basally.

Males with anterior femora armed beneath with a strong, subapical tooth followed by a row of finer teeth to apex. Another strong tooth is located at the middle, and is bent obliquely forward and upward. It is joined to the subapical tooth by a smooth, sinuate ridge. Posterior inner angle of metapleuron produced and strongly reflexed posteriorly.

Females with only one strong, oblique, subapical spine on anterior femora. Fifth ventral segment posteriorly strongly angulately emarginate, reaching almost to base of segment.

Color much lighter than in the other described species. Lateral margins of pronotum ochraceous throughout their entire length. Antennae with first segment, except narrowly at apex, and second segment, except at base and apex, ferruginous; otherwise black. Corium ferruginous laterally and apically. Clavus and inner corium ochraceous, the corium with a fuscous fascia along claval margin from apex, arcuate or elbowed anteriorly to tip of emboliar suture. Membrane pale at inner, basal third with a fuscous spot at center of pale area.

Length 5.2 to 7.4 mm. Greatest width (abdomen) 2.6 to 3 mm.

Specimens examined: Two specimens from Thame Park, Oxford, England sent by Mr. W. E. China. Also two specimens, Moldavia, and one, "Europe", in the P. R. Uhler Collection; two specimens, Thüringen, Breddin, C. F. Baker Collection; and one specimen, Germany, all in the collection of the United States National Museum.

Distribution: Norway, Sweden, Finland, England, Scotland, France, Germany, Switzerland, Austria, Hungary, Corsica, Italy, Moldavia, Caucasus, and Siberia.

Horvath (1898) examined the type of *Cimex abietis* Linnaeus (1758) and found it to be identical with *Eremocoris erraticus* Fabricius (1794). Although Reuter (1908) cast some doubt on the reliability of these "types" bearing "labels in Linné's handwriting," *Gastrodes abietis* auct., nec Linnaeus, was renamed *abietum* by Bergroth (1914). Excellent colored illustrations of this species may be seen by referring to Panzer (1805) or Nägeli (1933).

2. *Gastrodes grossipes* (Degeer), 1773

Body not excessively flattened, the anterior lobe of the pronotum and disks of coria distinctly elevated. Punctures fairly dense and coarse. Black portions of head and thorax glabrous, but less smooth and polished than in *abietum*. Head almost as long as wide including eyes, $20\frac{1}{2}$:21. Antennae very long, equal to distance from apex of head to apex of claval commissure; first segment long, almost one-half length of second, surpassing apex of head by more than half its length; proportion of segments one to four as 11:24:23:24. Rostrum attaining posterior coxae, its first segment reaching base of head. Pronotum transverse, 45:26, with anterior lobe relatively strongly convex; lateral carinae obsolescent anteriorly, not at all reflexed, the lateral margins distinctly sinuate at level of transverse impression; posterior margin more evenly and shallowly emarginate than in *abietum*. Lamellately expanded lateral margins of coria more expanded than in *abietum*, feebly reflexed throughout their length, subparallel basally, and then feebly sinuate. Anterior femora of both sexes armed beneath with but one subapical, stout tooth. Inner posterior angle of metapleuron neither produced nor reflexed in either sex.

Females with fifth ventral segment shallowly, roundly emarginate posteriorly, scarcely reaching one-third of the distance to base of segment.

Color black on head and thorax, excepting posterior lobe of pronotum. Elsewhere ferruginous, becoming darker on basal segment and at joints of antennae, on clavus and corium apically, and more or less on venter.

Length 5 to 7.2 mm. Greatest width (abdomen) 3.1 mm.

Specimens examined: Two specimens, Orshott and New Forest, England, from W. E. China; one specimen, Paris, France, E. P. Van Duzee Collection; four specimens, Moldavia, Montandon; two specimens, England, C. F. Baker Collection; one specimen, England, P. R. Uhler Collection; and one specimen, Hongkong, Koebele, the last eight specimens all in the United States National Museum.

Distribution: Norway, Sweden, Finland, England, Scotland, Ireland, France, Germany, Switzerland, Corsica, Hungary, Moldavia, Caucasus, Siberia, and China.

This is *Cimex ferrugineus* of Linnaeus (1767), which name is preoccupied by *Cimex ferrugineus* Scopoli (1763). Nägeli (1933) has given excellent colored figures of this species. There seems to be an excessive amount of variation as regards length of antennae and degree to which emboliar margins are reflexed in the United States National Museum series. Hence it is possible that this and the following species may run together, although typical examples differ strikingly as indicated in the descriptions and key. The Hongkong specimen is perfectly typical of *grossipes*.

3. *Gastrodes japonicus* (Stål), 1874

Form broader and more robust than in *grossipes*, the punctures more distinct, especially on the corium. Head slightly broader, eyes included, than long, $22\frac{1}{2}$:21. Antennae equal in length to distance from apex of head to tip of scutellum, basal segment one-half length of second, distinctly surpassing apex of head; proportion of segments one to four as 10:21:21:22. Rostrum attaining posterior coxae, the first segment not quite reaching base of head. Pronotum strongly transverse, proportion of length (measured on median line) to width 29:50; lateral margins distinctly sinuate at level of transverse impression, not at all reflexed; disk quite strongly

elevated, the transverse impression deep, but quite broad and ill-defined; posterior margin very shallowly emarginate. Lamellately expanded lateral margins of coria less broadly explanate than in *grossipes*, very feebly reflexed, the corial margin evenly arcuate or scarcely sinuate at middle of lateral lamellate region. Front femora with a single, strong, subapical spine beneath in both sexes. Posterior inner angle of metapleuron rounded, not reflexed in either sex.

Females with fifth abdominal segment shallowly, roundly emarginate posteriorly, the emargination reaching only half the distance to anterior margin.

Color much as in other members of the genus, the head and thorax, excepting basal lobe of pronotum, black. Elsewhere more obscurely ferrugineous than in either *grossipes* or *pacificus*, and becoming infuscated laterally on the venter. Membrane fumose; with pale areas, especially narrowly at inner basal angle.

Length 6 to 7 mm. Width (abdomen) 2.8–3.1 mm.

Specimens examined: One specimen each from the collections of Teiso Esaki, E. C. Van Dyke, Albert Koebele, and E. P. Van Duzee from Honshu and Kyushu, Japan.

Esaki (1932) gives an illustration of this species.

Distribution: Japan (Honshu and Kyushu).

4. *Gastrodes pacificus* (Provancher), 1889

Form much as in *grossipes*, rather than evenly rounded along the corial margins, as in *japonicus*. Surface rather flat above, slightly less punctate than in *japonicus*, particularly on disk of anterior lobe of pronotum. Head as long as broad including eyes. Antennae of moderate length, equal to distance from apex of head to a point intermediate between tip of scutellum and apex of commissure of clavus; first segment long, almost one-half length of second and exceeding apex of head by one-half its length; proportion of segments one to four as 13:25:24:25. Rostrum very short, reaching only to middle coxae, its first segment attaining level of middle of eyes. Proportion of pronotal length (on median line) to width, 32::52; disk of pronotum less strongly elevated than in *grossipes*, and the transverse impression less deep; lateral margins carinate, lamellate at level of transverse impression, not at all sinuate here, but rectilinear to slightly arcuate, not reflexed; posterior margin very shallowly emarginate. Lamellately expanded lateral margins of coria much as in *grossipes*, feebly sinuate just before level of apex of scutellum, feebly reflexed throughout their length. Anterior femora in both sexes armed with but a single, strong, subapical tooth. Posterior inner angle of metapleuron rounded, not conspicuously produced and not reflexed in either sex.

Females with fifth ventral segment rather deeply, subangulately emarginate posteriorly, reaching two-thirds of the distance to anterior margin.

Color much as in *grossipes* and quite typical of this group of species, the fourth rostral segment at tip, apical portion of third antennal segment, and fourth antennal segment in great part infuscated.

Length 5.9 to 7.27 mm. Width (abdomen) 2.39 to 3.1 mm.

Specimens examined: Provancher's type in the Provincial Museum in Quebec; three specimens, E. C. Van Dyke collection; six specimens, E. P. Van Duzee collection including three received from Provancher at the time the species was described; four specimens in the general collection of the California Academy of Sciences; eight specimens, United States National Museum; five specimens, Canadian National Collection; and five specimens in my own collection

all from the Pacific slope of the Western United States. Three additional, perfectly typical specimens at the National Museum were collected at St. George, Utah, while one in the C. F. Baker collection from Ft. Collins, Colo. has a somewhat longer rostrum and may prove to be a different thing. Mr. H. G. Barber writes that he has specimens from Nevada and Nebraska, but I have not seen these. Unique specimens from such widely separated localities in the Great Basin area suggest that careful search should be made for *Gastrodes* on all of the high, isolated mountain ranges in the western United States. Such places are as truly ecological islands today as they were physical islands during Pliocene and Pleistocene times.

Distribution: British Columbia, Washington, Oregon, California, Utah and doubtfully, Colorado, Nevada, and Nebraska.

5. *Gastrodes remotus* Usinger, new species

Elongate with sides subparallel, the general coloration rather dark ferrugineous and the surface rather coarsely punctate. Head scarcely longer than broad including eyes, 10::9. Antennae robust, the first segment one-half the length of second, surpassing apex of head by almost half its length; proportion of segments one to four as 7:15:13:13. Rostrum extending to posterior margins of middle coxae, the first segment a little more than half the length of second, 10::18, not attaining base of head. Pronotum robust, relatively little dilated posteriorly; the sides of anterior lobe subparallel at middle, distinctly sinuate at level of transverse impression, and subrounded anteriorly; sides dilated along entire margins but not reflexed; ratio of length on median line to posterior width 21::32; the ratio of posterior width to width of base of anterior lobe 32::26; disk moderately elevated on anterior lobe, the punctures coarse and irregular, somewhat sparse at center; posterior lobe with a sub-lateral, smooth, longitudinal elevation just within each humeral angle. Costal margins of coria subparallel on basal three-fourths of embolia, then distinctly sinuate and posteriorly evenly arcuate, the lamellately expanded embolia distinctly reflexed. Front femora strongly incrassate, the ratio of width to length 9::24, bearing a stout and slightly obliquely directed spine just beyond middle, and a row of smaller spines, three proximad and six distad to the large one. Front tibiae moderately bent. Inner posterior angle of metapleuron neither produced nor reflexed.

Color ferrugineous, the rostrum, antennae, legs, and base of pronotum much darker, piceo-ferrugineous to piceous. The head, pronotum except for lateral margins, scutellum, and under side of thorax black.

Length 7 mm. Width (hemelytra) 2.75 mm.

Holotype: male, **Macao**, in the G. W. Kirkaldy collection in the United States National Museum. The label bears no indication of the country in which the insect was collected. As pointed out (in litt.) by Mr. H. G. Barber, there are three geographical localities which bear the name Macao: Portugal, China, and Brazil (Rio Grande do Norte). Judging from our knowledge of the distribution of *Gastrodes* as well as from the known sources of Kirkaldy material it seems likely that the specimen is from Macao in southern China.

This species is not closely allied to any of the known species. It has the stout, dark antennae of the *conicola* group without the modified front femora or metapleural angles.

6. *Gastrodes intermedius* Usinger, new species

Rather large, the sides more nearly parallel than in *arizonensis* n. sp., with the characteristic pale ferrugineous markings of *pacificus* and its allies, but with the antennae black or piceo-ferrugineous. Head slightly longer than broad, eyes included, 22::21. Antennae about equal in length to distance from apex of head to middle of commissure of clavus; the first segment exceeding apex of head by almost half its length, less than half as long as second; proportion of segments one to four as 23:52:48:50. Rostrum reaching posterior coxae, the first segment not quite reaching base of head, second attaining level of posterior margins of front coxae. Pronotum about two-thirds as long as posterior width, the lateral margins slightly sinuate at level of transverse impression; lateral margins feebly lamellate even at sides of anterior lobe, more broadly so and scarcely reflexed at level of transverse impression. Costal margins of coria sinuate just before apices of embolia, the lamellate embolia distinctly reflexed. Front legs strongly incrassate and modified as in *conicola*. Front femur two-thirds as thick as long; two rows of spines along the lower, or inner side; a very strong, long, sinuate spine on inner apical third, which is turned up dorsally and directed more or less apically; and with a few prominent teeth on the turned up margin anterior to the large spine. Inner posterior angle of metapleuron roundly produced and narrowly feebly reflexed.

Color black on head, anterior lobe of pronotum, scutellum, and most of under side of thorax. Antennae and rostrum black to piceo-ferrugineous. Elsewhere ferrugineous.

Length 7.8 mm. Width (hemelytra) 3 mm.

Holotype: male, and one male *paratype*, **Dog Lake, Penticton, British Columbia**, Sept. 23, 1927, Ralph Hopping collector. The holotype, No. 4263, is in the Canadian National Collection at Ottawa while Mr. G. Stuart Walley has kindly made it possible for me to retain the paratype in my own collection.

Closely allied to the following species in its strongly incrassate front legs, stout black antennae, short rostrum, pronotal proportions, and reflexed inner posterior angles of metapleura. It differs from that species, however, in the sinuate lateral pronotal margins, more strongly sinuate and less strongly posteriorly dilated costal margins of coria, smaller size, and much paler coloration.

7. *Gastrodes arizonensis* Usinger, new species

(Figure 1)

Oblong-oval, large in size and rather uniformly dark in color, piceo-ferrugineous. Head slightly longer than broad, eyes included, 26::23. Antennae with first segment less than one-half the length of second, surpassing apex of head by almost half its length; proportion of segments one to four as 10:23:22:21. Rostrum short, scarcely attaining level of anterior margins of hind coxae, the first segment not reaching base of head. Pronotum narrow at base, the ratio of length on median line to basal width 29::46 (29::50 in *conicola*); lateral margins rectilinear at level of transverse impression; disk moderately elevated on anterior lobe. Costal margin of corium rather evenly rounded, the lamellate, basal portion feebly but distinctly reflexed. Fore legs strongly incrassate as in *conicola*, two and one-half times as long as broad, with a very long, strong, sharp spine on inner, apical third, which is turned up dorsally and directed apically, with several prominent teeth on the turned up margin anterior to this. Inner posterior angle of metapleuron roundly produced and distinctly reflexed.

Color pitchy black on the head, antennae, rostrum, anterior lobe and posterior lobe antero-medially of pronotum, scutellum, pleura, sterna, venter, and femora apically. Tarsi appearing paler, particularly the basal segment, which is covered beneath with fulvous hairs. Elsewhere piceo-ferrugineous or lighter, ferrugineous, on lamellar expansions of pronotum and corium.

Length 8.19 mm. Width (hemelytra) 3.27 mm.

Holotype: male, No. 4533, Mus. Calif. Acad. Sci., Ent. type collection, collected at **Rustler's Camp, Chiricahua Mts., Arizona**, in July 1936 by Mr. E. S. Ross.

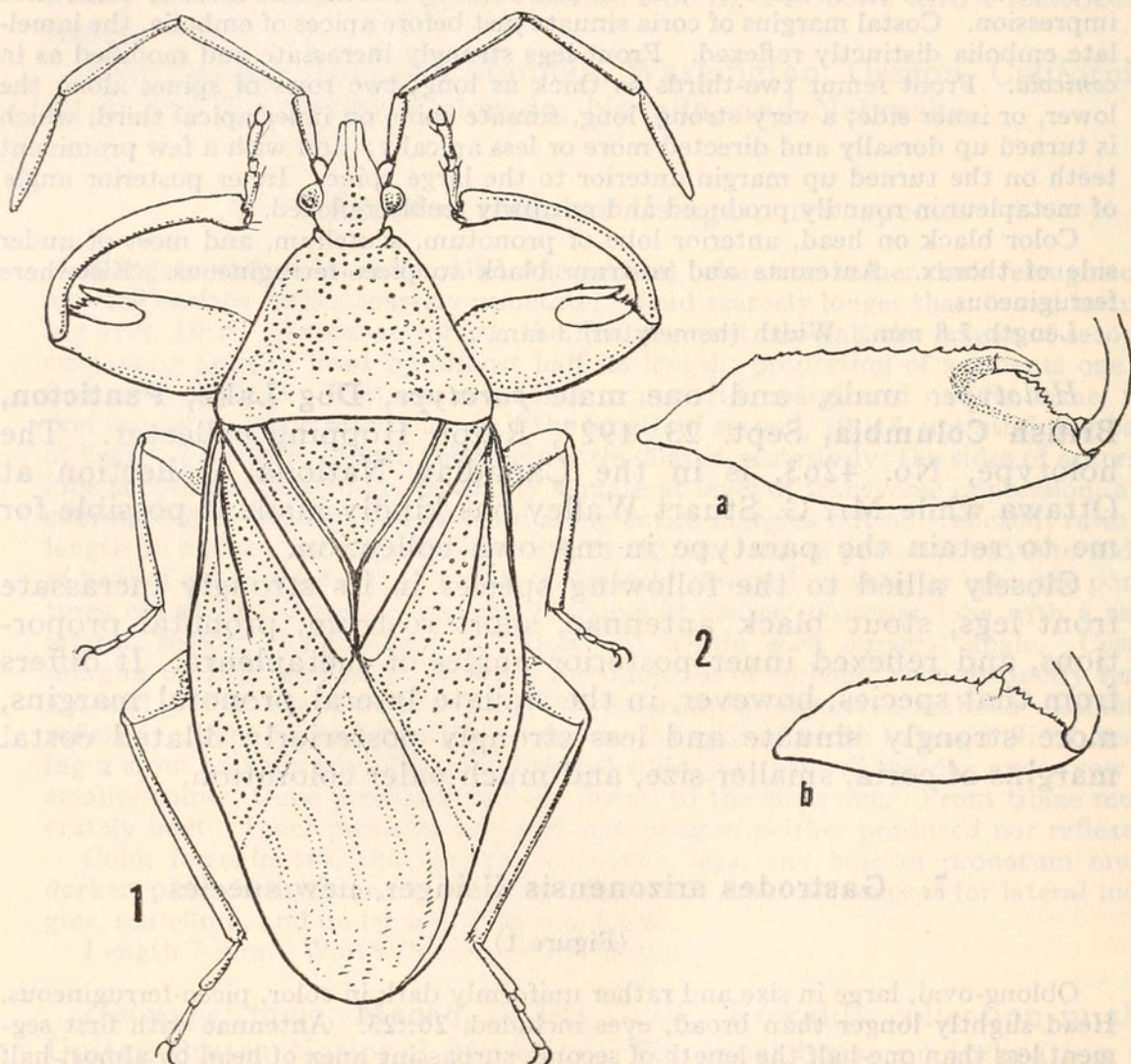


Figure 1, *Gastrodes arizonensis* Usinger, new species, male holotype. Figure 2, *Gastrodes conicola* Usinger, (a) front femur of male, (b) front femur of female.

Very near *conicola* Usinger, but with the margins of the hemelytra more arcuate, the lamellately expanded base less strongly reflexed, pronotum narrower at base, and rostrum scarcely reaching posterior coxae, its first segment attaining level of posterior margins of eyes. A pair of specimens (Cat. No. 631, Brooklyn Mus. Coll.) in the

United States National Museum from the Huachuca Mts., Arizona, are considerably smaller in size, less shining, paler in coloration, (the corium, venter, and base of pronotum ferrugineous), and have a slightly longer rostrum. Further collecting may show that these differences are constant and warrant the erection of still another species. A specimen from Nevada in the P. R. Uhler collection may belong in this group but is so mutilated as to be indeterminable.

8. *Gastrodes conicola* Usinger, 1933

(Figure 2)

Form more elongate, with the sides more nearly parallel than in previous species, the corium rather sparsely punctate, and the disk of anterior lobe of pronotum and of scutellum with numerous small, irregular, impunctate areas. Head distinctly longer than broad, eyes included, $30::25\frac{1}{2}$. Antennae equal in length to distance from apex of head to middle of commissure of clavus, the first segment almost one-half as long as second, surpassing apex of head by one-half its length; second segment much longer than third or fourth; proportion of segments one to four as $16:34:29:28$. Rostrum very long, reaching at least to middle of first abdominal segment, the first segment attaining base of head. Pronotal ratio of length on median line to width at base $29::50$; disk moderately elevated, the transverse impression ill-defined but deep; lateral margins lamellate even anteriorly, feebly reflexed at middle, rectilinear to very slightly sinuate at level of transverse impression; posterior margin shallowly emarginate, rectilinear at middle. Lamellately expanded lateral margins of coria strongly reflexed basally, feebly sinuate behind this.

Males with the front femora strongly incrassate, the subapical, strong tooth of each bent dorsally and apically, and forming a cup-shaped hollowing. Posterior inner angle of metapleuron roundly produced, and distinctly reflexed.

Females with front femora less strongly incrassate, and with the subapical, strong teeth bent only slightly obliquely, as in the females of other species of the genus. Fifth ventral segment deeply, subangulately emarginate behind, reaching two-thirds of the distance to anterior margin. Inner posterior angle of metapleuron rounded, but little produced, and scarcely reflexed.

Color much as in other species, but with the antennae entirely black or piceo-ferrugineous, and the legs more or less, and the rostrum broadly at base and narrowly at apex, piceo-ferrugineous.

Length 7.3 to 8.5 mm., width 2.9 to 3.2 mm.

Specimens examined: fifty-three specimens, R. L. Usinger collection; nine specimens, Koebele collection at the California Academy of Sciences; and a series collected by Koebele and deposited in the collection of the B. P. Bishop Museum in Honolulu, all specimens from Mt. Diablo, Contra Costa County, and Cedar Mtn. Ridge, Alameda County, California, on Digger Pine, *Pinus sabiniana*. Linsley and Usinger, (1936) give a small figure of this species.

Distribution:—Mt. Diablo and Cedar Mtn. Ridge, California.



Usinger, Robert L. 1938. "Review of the genus *Gastrodes* (Lygaeidae: Hemiptera)." *Proceedings of the California Academy of Sciences, 4th series* 23, 289–301.

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